The American Journal of Pharmaceutical .... Education ....

THE OFFICIAL PUBLICATION OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

"One of the greatest tragedies in our pharmaceutical inheritance is the fact that the pharmacist has been too willing to let someone else do much of his thinking for him. This has been one of the significant factors retarding the professional growth of pharmacy in this country. It becomes of paramount importance, therefore, that, as we enter a new growth phase in pharmaceutical education, continued emphasis be placed on those concepts and methods that will encourage creative and independent thinking among students of pharmacy."—Donald C. Brodie and Sidney Riegelman, The University of California.

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INSTITUTIONS HOLDING MEMBERSHIP IN THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

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Detroit Institute of Technology, College of Pharmacy and Chemistry, Detroit. (1923)
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University of Kansas City, School of Pharmacy, Kansas City. (1948)
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The Significance of Graduate Study and Graduate Degrees*

WALTER C. RUSSELL, Ph.D.

Rutgers University, The State University of New Jersey

This morning I should like to present my comments under three general headings, the preparation of undergraduates for graduate study, the graduate program, and the training of college teachers and research specialists.

Any young man, or young woman, completing a program of undergraduate work must make a decision as to what he is going to do next. If he decides to enter graduate study in some phase of pharmacy there is the hope that this decision has arisen from a real love of the subject and that it is not based too much on the idea that any advanced degree in any field means a higher earning power than the possession of only a bachelor's degree. Druggists seem to be a fairly prosperous group so in the case of pharmacy I would judge that the individual goes into graduate study largely because of a love of the subject rather than to increase his earning power.

Brief reference to the catalogues of several universities which offer programs of graduate study in the general field of pharmacy reveals that students entering graduate work come from two sources: from colleges of pharmacy where they have followed a prescribed curriculum and from other curricula, especially those with concentrations in chemistry and botany. To enter a graduate school, the usual procedure is for the individual to file an application for admission which includes a transcript of the undergraduate record. Sometimes letters from professors under whom he has studied, and perhaps the results of a test, such as the Graduate Record Examination are a part of the application. Assuming that the undergraduate years were spent in an institution of recognized standing, it has been my experience that an under-

* Presented before the Teachers' Conference on Graduate Instruction at the 1950, Atlantic City Meeting. Dr. Russell is the Executive Secretary of The Graduate Faculty, Rutgers University, New Brunswick, New Jersey.

graduate transcript is the most reliable document upon which to base a decision. Letters from professors are helpful, if you know something about the individual who wrote the letter. They usually reveal information about an applicant's personality, cooperativeness, and research promise, all important factors in reaching a decision, but too often a professor gives an opinion of scholastic ability quite at variance with the transcript of record. If the applicant is from an institution of recognized academic standards, the Graduate Record Examination does little more than confirm the transcript. On the other hand, if he is from an institution whose standards are questionable, this examination, or a similar one, may reveal certain weaknesses. I am aware of the fact that there is not in the Graduate Record Examination at the present time an advanced test in pharmacy so that if an applicant presents the results of this examination it is more than likely that he will have taken it in some basic field such as chemistry.

None of the above criteria, unless it is a letter from a professor, provide information concerning the very important qualities of originality, critical ability, creativeness, imagination, and the power of associating one set of observations with others, and as yet no test of these qualities has been devised. We need very badly some type of test or device which will allow us to determine these important attributes which are not shown by a transcript of record and which are difficult to ascertain. Ordinarily we take a chance that these qualities are latent and will develop. No applicant should be accepted unless his application has been given approval by the chairman of the department concerned or someone in that department assigned the responsibility of examining applications. The administrative officer in charge of graduate work should have a part in the acceptance or rejection of the applicant, but he should serve as a check on the decision of the subject matter department rather than as the individual who makes the primary decision. His services are especially valuable in the case of professors who are too kindhearted and are willing to accept anybody who happens to apply.

As indicated earlier, it is my understanding that students entering your graduate programs come from colleges of pharmacy and from undergraduate programs in the sciences. That no one

has hit upon the ideal program for an undergraduate who expects to go into graduate work is attested by the fact that one rarely finds two transcripts alike even from the same university. Perhaps those who enter from colleges of pharmacy will present a fairly uniform program of study, but I am quite sure that those who come to you from the basic sciences will present a variety of courses. Any science curriculum should have a considerable leavening of subjects in the humanities, social sciences and foreign languages. A student who leaves the undergraduate college after having followed a highly specialized program with a heavy concentration in his field of interest, and then goes on to graduate school for still greater specialization, is turned out a highly specialized specialist in a particular field. Being a specialist in that field he believes in specialization and if he takes a position on a college faculty, he proceeds to turn out more specialists. Our college and university faculties are becoming populated with those who have specialized so intensely that they have no breadth of viewpoint in educational matters. Furthermore, this highly specialized individual may not be able to reach his full potentiality as a teacher or in a research organization because his viewpoint is liable to be narrow and he is not capable of appreciating the significance of the work he is doing.

At the present time there is considerable discussion of general education and the taking of liberal courses by those who expect to go into the fields of sciences and engineering. There seems to be a good bit of confusion in just what liberal studies are and what general education is. It is my understanding that we mean by liberal studies the usual formal courses in history, literature and fine arts, for example, taught for the sake of the subject itself, whereas general education refers to teaching from the life-connected viewpoint so that the student sees the relationship of the course content to other fields of knowledge and to the world in which he lives. This frequently means the crossing of departmental lines in presenting course material.

Some departments of instruction find it advisable to give a placement test at the beginning of the first year of graduate work. This provides evidence of the quality and extent of a man's previous training and puts the department in a better position to advise him concerning the courses he should pursue. One department of chem-

istry which uses such a test, frequently advises a student to take again some of the courses he has already had because he has not shown sufficient proficiency in certain subjects. And occasionally a student, after seeing the results of the test, decides that chemistry is not his forte.

I think this is a good place to mention a matter to which I have been giving some thought recently. Rather than receive into the graduate school a highly trained specialist from an undergraduate college, I would prefer to have a student who has had a more liberal course of study, in fact one who actually requires more work in his special field before he is ready to take advanced work. I would be willing to let this individual take certain of the upper undergraduate courses as part of the graduate major, if he has taken a broader training at the undergraduate level.

This brings me to the consideration of the second point, namely, the program of the graduate school. I suppose the first question that should be considered is what are the objectives of the graduate school. During my experience in the administration of a graduate division, I have heard many talks on graduate work and the objectives of the graduate program. Frankly at the moment I don't remember what any of them were. I could have gone to various published speeches, picked out objectives and quoted them to you. A number of you here have had enough experience in graduate instruction to formulate a set of objectives. Very simply, the graduate school has as its primary purpose the provision of opportunities for advanced study of basic character and research, and too much emphasis cannot be placed on the basic or fundamental nature of the work. It would seem to me that pharmaceutical chemistry, for example, with adequate supporting courses in advanced chemistry would be a basic field suitable for a doctoral program whereas further training in professional pharmacy courses, that is courses of the skill and technique-training type, would hardly be appropriate for the doctorate.

Then some want a statement of the philosophy of graduate work. I would not want to attempt such a statement because the real philosophy is in the hearts and minds of the faculty. It is they who provide the spirit, vitalize the academic machinery, and inspire the student.

There is always a question as to who should constitute the faculty that teaches the courses and directs the research of graduate students. The means of selection varies from university to university, but in general the selection has pointed toward assembling those individuals of a university faculty who have had the advantage of advanced training and are actively engaged as original investigators. In some universities the selection is made by the department and those individuals so selected become members of the graduate teaching group. In others there is an automatic device such as the inclusion of all members of the university faculty who are in charge of graduate courses along with certain members who are appointed, usually by the president of the institution, because of their close association with graduate work. Some institutions use the device of constituting the faculty of those members of the university faculty who comprise the committees in charge of the work of the graduate students. No single formula that I know of will guarantee a satisfactory graduate faculty, but in general the men who are competent to do this kind of work finally merge into the group by one means or another. In this respect the graduate administrative officer has a considerable responsibility and can ofttimes guide the selection of those who are to take care of graduate instruction and direction of research. Personally I don't like to see too much machinery involved in the selection of a graduate faculty but would rather let the public opinion of the faculty decide who should properly constitute this group.

The faculty of a graduate school assumes that the young people under its direction have a seriousness of purpose. It is concerned with making it possible for these students to become competent in some field of learning, and in one or two allied fields, and to develop as original investigators. Students are expected to attend classes, but in the graduate division the classes should serve largely as a guide for extended reading and independent study on the part of the student who should go beyond the minimum requirements in order to master thoroughly the field he has chosen for study. As soon as possible he should be put on a research problem and watched carefully to ascertain his reaction to the research situation. The faculty should provide an environment which will permit the student to display those qualities I mentioned earlier,

namely, originality, critical ability, creativeness, imagination and the power of association.

As we all know, graduate instruction consists of attendance at formal courses, seminars, and always for the doctorate, working on a research problem. The question is sometimes raised, what is a graduate course? I have no good definition for such a course except that in general it is one which would normally be taken after the student has completed an undergraduate program in a particular field of study. It might well be taken by seniors who are particularly well prepared but might prove too difficult for the general run of students unless they were especially interested in the field. It has been our experience that it is best to keep undergraduates out of strictly graduate courses. Occasionally an outstanding senior may be admitted to a course for graduate students but if too many undergraduates are allowed in there is such a dilution that the course simply becomes an upper undergraduate offering.

I do not need to tell you how formal graduate courses should be taught. We all know that they are largely of the lecture type but the student should be given every opportunity to express himself in one way or another. This might be by requiring him to prepare a series of critical reports of papers taken from the literature, and certainly there should be a sufficient number of examinations in formal courses so that the instructor can give a sound evaluation of the work of a student. I do not think that the single final examination at the end of the course is really a fair estimate of scholastic ability.

After a student has left the undergraduate years and has entered graduate school, we like to think of him as an individual standing on his own feet, who will work as an independent student and who is in the graduate school for the business of equipping himself thoroughly for his career. Too often at the undergraduate level he has been hand-fed and nursed along so that he is not an independent student but is one who has accepted what the professor has told him and at examination time has written it down on an examination paper. The mark that he receives is usually based on how well he returns to the professor what the professor told him. One of the first things that must be done when a student

enters the graduate school is to wean him away from this concept of leaning upon the professor for the acquisition of knowledge. Therefore as soon as possible, the student should depart from formal lecture courses and go into seminars. I would like to take a moment to express some views about seminars. Frequently they are organized so that each student presents a paper once each semester. This paper is often a long review paper in which the student simply reports what others have done. There is practically no critical evaluation by the student. In my own experience I find it better to have the student select a paper from the current literature, and may I say one which is outside the field of his research so that he is not actually getting credit, one might say, for his research activity in a seminar period, which he presents, preferably extemporaneously, after a thorough study of the paper and any necessary associated papers. After presenting the objective, the results and the conclusions, most important of all is to have him give his critical evaluation of the paper. It is only after a student has learned to hold up a paper to critical view that he is beginning really to think in his field of work. The very act of standing on his feet to talk to a seminar is a very valuable experience and I have had students tell me in the second year of graduate work, in one of our seminars, that it is the first time since they entered college that they have had an opportunity to stand up and talk before a group. Many of them value this experience and in our own seminars we endeavor to criticize the student from the standpoint of his platform performance so that when he leaves us we hope that he will be a better public speaker. It is our practice to grade a student immediately after the seminar.

With regard to research, I need not say that for the master's thesis we might appropriately ask the student to rework a problem but for the doctor's degree we must always insist upon an original contribution. We have been successful in starting graduate students on research just as soon as they are out of the undergraduate college. True enough they make slow progress and need a lot of guidance, but we find it is better to do that than to have them devote, perhaps another year to course work which is simply a continuation of what they had been doing as undergraduates. In general, I believe it best to have them start research with a fairly

good course load and then, as they progress through the years of graduate study, cut down the course load and increase the time for research.

Following the completion of the research problem, there comes the writing of the thesis. Now I do not want to deal too much in detail with techniques but I believe it is important to emphasize the simple fact that the student should write his thesis. Too often a student tries to get something down on paper and present it to the professor with the hope that if the latter does not like it he will rewrite the thing. This I believe is very bad practice. If a student is not able to write a thesis then he should not receive a degree. It is my own practice to require a student to submit to me the thesis in the form in which he says it is ready to be typed in final form. I sample it. If I find that he is making certain errors throughout the thesis I turn it back to him, point out those errors and insist that he do it over again. If it is found to be in good shape after reading the thesis from the critical viewpoint and from the standpoint of editing it as if it were for a journal publication, it is then typed in final form. Actually, I believe that the impression the thesis makes on the major professor is one of the best estimates he can have of the potentiality of the student. The student, of course, does not think of the thesis as an examination but in reality it is a situation in which the student is giving himself an examination.

We hear these days of guidance for graduate students and of course much more of guidance for undergraduates. The graduate student should have some guidance, but in general he should be allowed to reveal his characteristics by making his own choices and decisions. We have found the committee system effective, that is, a committee which consists of the major professor and members of the faculty representing the various fields of work in which the student has taken courses. The major professor, as chairman, has the responsibility of assisting the student in organizing his program of study, but the committee should have the right of approving the program which the student and the major professor work out. This committee conducts the examinations and reads the thesis. And it is a good thing for the student to know that a group of four to six faculty members constitute a committee which

considers itself responsible for his work both in courses and in research. I must emphasize that a program of study should be fitted to a student's needs and that a student should not be required to fit a rigid program.

A discussion of graduate study would not be complete without some reference to the question of foreign languages. Traditionally, two foreign languages have been required, usually French and German, with frequently a substitution allowed for one of these. This requirement is being questioned. I shall not go into detail with regard to this problem; perhaps in the discussion some member of the group may wish to allude to it. A very interesting and worthwhile experiment in the use of foreign languages is being conducted at the University of Minnesota where departments have been allowed to designate the languages which they require for their subject matter fields. Some departments continue to require two foreign languages, whereas others require one foreign language and a special research technique or a collateral field of study. It is of interest, however, that none of the departments has gone to the extent of eliminating both foreign languages.

Perhaps this is a good place to say that in the organization of graduate work I do not believe that at the university level there should be too many detailed requirements. The legislative graduate body of the university should set minimum requirements and then allow the departments or divisions to shape their own specific requirements. This places the responsibility for graduate study and research squarely on the department or division where it belongs, that is, in the hands of individuals who know most about a particular field of work.

I now come to the third point, namely, that of training college teachers and research specialists. I do not have any recent figures but for the decade ending in 1945, according to the Office of Scientific Personnel of the National Research Council, 214 doctorates were conferred in the United States in the fields of pharmacology and pharmacy out of a total of 14,905 science doctorates conferred in that period. In his book, *Toward Improving Ph.D. Programs,* Hollis, reports that in the decade ending in 1940, 21 universities were conferring the doctor of philosophy degree in pharmacology. This is the only designation used and I

assume that it includes degrees in other fields of pharmacy. During this time 129 persons received the doctor's degree. As of the end of that period, in round numbers, 28% were engaged in teaching, 30% in research, 3% in administration, 24% in teaching and research, 5% in teaching and administration, and 6% in research and in administration. So here is the evidence, as in every field of science, that some of the graduates go into teaching and some into research, and yet they are in general all trained according to the same formula of courses and research. As is well-known, the question is being raised in many parts of the country and by various groups as to whether training for research is also training for effective teaching.

Naturally all of us here are good teachers or have been at one time, and no one told us how to go about the job of teaching; we just learned the hard way. I have a feeling that the current criticism of college teaching is a lot more smoke than fire. If our ability as a nation to produce material things is a measure and if we assume that a great part of this material production is due to discoveries and developments by university-trained scientists and engineers, then our teaching cannot have been too bad. On the other hand, if we consider the social attitudes and spiritual values, perhaps there is some criticism rightly made of the way in which our students have been taught.

As nearly as I can assess the current viewpoint, developed at various conferences and discussions relative to the training of college teachers, faculty members in the subject matter fields desire to have the training of those who elect to teach in colleges and universities left largely in the hands of the subject matter departments. There is a feeling that graduate students should not be subjected to formal courses in professional education. For the most part, the attitude seems to be that graduate students should receive any training in the preparation for college teaching on a voluntary basis.

It is urged, and I think rightly so, that we should do some active recruitment of prospective college teachers and it is not too soon to search for good teaching talent in the junior and senior year, and such students should be urged to go on to the graduate schools. Once in the graduate school he should be given an op-

portunity to attend lectures, for example, on the history of universities and the place of the faculty member in the university. He should also receive some instruction from mature teachers in classroom and laboratory teaching techniques and perhaps with profit some presentation of the principles of learning which one would designate, I suppose, educational psychology. One or more members of the department who are known to be good teachers should have the responsibility of supervising any teaching done by the young graduate student. There is also the question of apprenticeship and if at all possible, the young Ph.D. should be allowed to teach under supervision on an apprenticeship basis, with a salary that would provide a satisfactory living. I would like to add that in the recruitment, one should endeavor to obtain young people who have had sufficient breadth of training that they will not go into graduate school and finally become a member of a college faculty after they have followed such a highly specialized course that they cannot see anything in the educational process outside of their own narrow field of specialization.

The present interest in the training of graduate students to become college teachers should not cause us to neglect the other large group of students, and in some sciences a much larger group than those who expect to go into teaching, namely those who look forward to a research career and are now frequently referred to as "research specialists". I believe we should do something about inducting these individuals into their future employment.

At Rutgers, in addition to planning a program for the preparation of college teachers, we are giving some attention to the matter of the training of research specialists and we have under consideration several devices. In a research laboratory, as you know, there is the all-important matter of keeping notes. All of us who have had experience in the training of graduate students are aware of the difficulties involved in getting them to record notes that can be understood by other persons in the laboratory. I understand that industrial laboratories are very particular about the manner in which notes are kept, since they may constitute evidence in a court of law. Good practice in keeping notes can readily be instilled in students by the professors in charge of their research, if the professor will only take the time to insist that

the students keep notes in such fashion that they can be used readily in the preparing of reports. I cannot stress too much the training of students in the writing of clear, concise and critical reports, and this is a second point on which we will place emphasis in the training of research specialists. It is a frequent complaint of directors of industrial research that it is very difficult to get a research worker to write a report in a clear, concise, readily understood manner. This has certainly been my own experience in handling graduate students who are doing research work for the doctorate. It has become a practice in my own laboratory to require monthly reports of research results, giving in some detail the object of the experiment, the results and a critical evaluation of these results. My associates and I endeavor to edit these reports as if they were journal articles. How much good this does for the future of the students, I do not know. They tell us, however, that after several years of writing reports and having them edited, they feel they are better qualified to write a satisfactory report than when they first came to us. And incidentally, these reports furnish an excellent basis for the preparation of a thesis. We also hope to make it possible for students particularly in the fields of chemistry and physics, to have some instruction concerning patent law, and I would assume that in the field of pharmacy a prospective research specialist should have some knowledge of this field. I refer here not to the details of patent matters but rather to the general principles involved. Then we are told that outside of university laboratories there is a great deal more of cooperative team work and we all know that the graduate student ordinarily works as a sort of lone wolf type of fellow. The prospective research specialist should have some idea of the type of cooperative work which will be expected of him. To present this viewpoint we believe it would be advisable to invite directors of research to come to our campus to speak to small groups of graduate students in a seminar type of meeting, where they could present the way in which industrial team work is conducted.

So far we have thought that any training for college teaching and of research specialists should be in addition to and should not detract from the present program of graduate courses and

research. It is possible, however, that we may have to give up a certain amount of time now devoted to the usual program in order to induct the student into the kind of activity he desires to enter after the completion of work for a degree.

In the present day discussions, most of the emphasis is on the responsibility of the graduate schools in preparing students for college and university teaching. I maintain that the receiving institution, a university or an industry, also has an obligation to induct the new Ph.D. into teaching or into research.

I realize fully that your organization is quite aware of many of the matters I have been discussing. In the Findings and Recommendations of The Pharmaceutical Survey, 1948, specific mention is made of the importance of recruitment of future teachers of pharmacy from the ranks of undergraduate students who have displayed those qualities we would like to see in a college or university teacher. Also this report encourages the designation of certain schools of pharmacy to serve as centers for the preparation of teachers. This suggests an application of the regional plan which is beginning to develop in certain parts of the country. Furthermore, the report takes notice of the necessity for teaching fellowships so that a young man or young woman might have some form of financial support during the years as a graduate student. The human side of the student and his social responsibility are not neglected since the survey gives some attention to the matter of general education. You recognize that research staffs of pharmaceutical concerns embrace many individuals who did not do their graduate work in a college of pharmacy. These are the organic and physical chemists, the botanists, and more recently the microbiologists. I have also noted that you recognize the vitalizing influence of a strong graduate body and research group on an undergraduate college.

Perhaps I have given too much attention to the machinery and organization of graduate study. I want to emphasize, therefore, in closing, that the most perfect organization is of no value unless the men who operate it are men of good will, with a strong sense of fairness, who have a thirst for knowledge and who are constantly driving forward into the unknown, and who, above all have a kindly understanding of their associates and students.

The Part of Doctors of Medicine in Pharmaceutical Education*

GEORGE URDANG
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The Early Period

It is an established fact that the need for pharmaceutical association and education in the United States of America found its early recognition and met with active interest in medical rather than in pharmaceutical circles.[1] The physicians in the growing cities of the East for whom self-dispensing gradually had become a nuisance rather than a welcome money maker, and even the other physicians who were buying the ingredients used by them for their own compounding, wanted to be sure that they and (or) their patients were furnished by the apothecaries with unadulterated and undeteriorated drugs warranting the expected effect.[2] It was a matter of highest personal interest to the physicians, and there is no doubt that Dr. John Redman Coxe, professor at the School of Medicine of the University of Pennsylvania, expressed a general feeling among the medical practitioners of his time when in March 1820 he said the following concerning the desirability of courses for pharmacists to be given in his school:

"**. . . it is obvious that his [the physician's] success in practice must greatly depend on the confidence which he may have in the knowledge and integrity of the person to whom he confides the responsible task of compounding his prescriptions, and of the assurance he may feel that such confidence is not misplaced in the employment by the apothecary of inert or deteriorated articles.**" [3]

The pharmacists in Philadelphia refused the offer of courses in the medical department of the University of Pennsylvania, and the first organized instruction for pharmacists in this country, based on group consent and setting the pattern for a long time to come, was given since 1821 in the school founded and supervised by

* Presented before the joint meeting of the Section on Historical Pharmacy and the American Institute of the History of Pharmacy, American Pharmaceutical Association Convention, Atlantic City, 1950.

1 Kremers—Urdang, History of Pharm., Philadelphia, 1940, pp. 173-181.

2 The Pharmacopoeia of the Massachusetts Medical Society, Boston, 1808, pp. VI, VII, X.

3 England, J. W. (editor): The First Century of the Philadelphia College of Pharmacy, Philadelphia, 1922, p. 45.

practising pharmacists, i.e., the Philadelphia College of Apothecaries (called College of Pharmacy since 1822). It was, however, people with a medical background, Doctors of Medicine, who during the first decades did the teaching. About a quarter of a century later, in 1846, a professorship of pharmacy to be taken care of by a pharmacist was considered at the same institution, its first incumbent being William Proctor, Jr.[4]. The report of the committee appointed to study the matter started with the following statement:

"In organizing the school of pharmacy, it was found necessary to seek professors in the ranks of the medical profession—few, if any, of the apothecaries had so accustomed themselves to the systematic study of the several branches connected with the practise of our profession, as to be prepared to assume the office of teachers. Hence it is not surprising that the theory and practice of pharmacy, although held to be of the highest importance to the student, was not alloted to a professor as a separate branch of instruction, but was appended secondarily to the branches of materia medica and chemistry . . . " [5]

What was said above for the first twenty-five years of the school of the Philadelphia College of Pharmacy naturally held true for the other early Schools of Pharmacy in the United States of America. The only chair established for pharmacy proper "as a separate branch of instruction" before the appointment of William Procter, Jr. at Philadelphia, that at the School of the Maryland College of Pharmacy (1844), was occupied by an M.D. It is almost understood that the two gentlemen then teaching chemistry and materia medica at the Maryland school came likewise from the ranks of medicine.

In New York the dual professorship of materia medica and pharmacy was held by Doctors of Medicine until 1861 when the pharmacist, John M. Maisch,[6] was elected. When the Chicago College of Pharmacy was founded in 1859, two physicians were entrusted with the teaching of chemistry and materia medica respectively, while the lectures on pharmacy were given by "Dr.

4 William Proctor Jr., (1817-1874) has been called "the father of American Pharmacy" in recognition of his early and consistent endeavor in behalf of professional pharmacy. The founding of the American Pharmaceutical Association in 1852 was mainly due to his foresight and persistence.

5 Kremers—Urdang, 1 c., p. 206.

6. John M. Maisch (1831-1893), political refugee from Germany (1849), teacher and author. Maisch was the first Permanent Secretary of the American Pharmaceutical Association and was influential in initiating and shaping American pharmaceutical legislation.

Franklin Scammon, a pioneer druggist and botanist."[7] The Doctor title of this gentleman was that of an M.D.

There was, as a matter of fact, up to the late nineteenth century quite a number of 'pioneer druggists" in this country who held the M.D. degree of one or the other of the many schools of medicine offering their degrees rather cheaply as far as the expense in time and money and the amount of acquired knowledge was concerned. There were still more physicians who kept drugstores, dividing their attention between the practice of medicine and the conduct of their stores. Both groups of people were naturally familiar with the needs of practical pharmacy. The extent to which their being Doctors of Medicine influenced the contents and the way of their teaching was, of course, directly proportional to their really being medical men and not merely bearers of a medical degree. There were, finally, teachers with an M.D. degree at medical as well as pharmacy schools who were excellent natural scientists, chemists or botanists—or even both—and experts in the materia medica of their time.

For instance, George B. Wood[8], M.D. of the University of Pennsylvania, had an extraordinary knowledge of pharmaceutical and general chemistry, and materia medica and pharmacy, the fields of his teaching. The same holds true for Wood's lifelong friend and colleague, Franklin Bache,[9] like Wood an M.D. of the University of Pennsylvania and Wood's successor in the chair of pharmaceutical and general chemistry at the Philadelphia College of Pharmacy from 1831 to 1841. The United States Pharmacopoeias of the United States Dispensatories appearing between 1831 and 1863, edited and to a great extent compiled by these two men, offer sufficient proof for the eminence of Wood and Bache in the sciences of pharmacy, especially in contemporary pharmaceutical chemistry.

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7. Day, W. B.: The School of Pharmacy. The Alumni Rec. Univ. of Illinois, 1921, p. XXV.

8 George B. Wood (1797-1879), professor at the Philadelphia College of Pharmacy and later at the Medical Department of the University of Pennsylvania, most influential in the shaping of the editions of the United States Pharmacopoeia from 1831 to 1873, initiator of the United States Dispensatory and editor of its first thirteen editions, the fourteenth (1877) started by him but completed by his nephew, Horatio C. Wood.

9. Bache, Franklin (1792-1864), professor of chemistry first at the Philadelphia College of Pharmacy and later at Jefferson Medical College, co-worker of George B. Wood in pharmacopoeial revision work and in the compilation of the United States Dispensatory. Bache was a great grandson of Benjamin Franklin.

It has to be kept in mind that the replacement of medical men as researchers and experts in pharmaceutical chemistry by pharmacists—which started in continental Europe in the late seventeenth century and became predominant (especially in France and Germany) after the middle of the eighteenth century—did not find a counterpart in the Anglo-Saxon world. There was among the many excellent English chemists of the late eighteenth and early nineteenth centuries (Black, Cavendish, Priestley, Davy, Chenevix, Hatchett, etc.) not one who had come from the ranks of pharmacy. There were not even many who, like Black ,combined the study and the teaching of medicine and chemistry.

As far as contemporary North America was concerned, there were no creative native chemists of any importance. The born Americans who in this country up to the Civil War were disseminating chemical and especially pharmaceutico-chemical knowledge, were mostly products of (and in their later career teachers at) American medical schools. In some exceptional cases, they had studied abroad as for instance Samuel L. Mitchell[10] in the late eighteen century in Edinburgh with Joseph Black as his teacher in chemistry and Benjamin Silliman[11] in the early nineteenth century in London under Friedrich Christian Accum, a German apothecary who had developed into one of the most versatile and effective industrial chemists of his time, and whose laboratory in London was "the first school of chemistry [not connected with a medical faculty] to which early students went from the United States."[12]

The fact that the "M.D." was the only American degree available beyond the bachelor's degree up to the middle of the nineteenth century, made it almost obligatory for every American with academic ambitions and special interest in the natural sciences who could not study abroad to enter a medical school and to obtain the degree of an "M.D.". It was not until 1861 that the first Amer-

10 Samuel L. Mitchill (1764-1831), physician, chemist, scientific as well as literary author, teacher and statesman. He was the founder and for a number of years, editor of the first medical journal in the United States of America, the *Medical Repository* and was instrumental in the endeavor leading up to the publication of the first edition of the United States Pharmacopoeia. In his chemical research and publications the influence of his teacher Black is observable.

11 Benjamin Silliman (1772-1864), physician chemist, teacher and author. His Elements of Chemistry (2 vol., New Haven, 1831) was a very influential American textbook on chemistry.

12 Brown, C. A.: The Life and Chemical Services of Frederick Accum, *Journ. Chem. Ed. 2* (1925): 829-851, 1008-1034, 1140-1149; Schuette, H. A.: Death in the Pot *Transact. Wisc. Acad. Sc. Arts, Literature 35* (1943): 283-303; Urdang G.: Pharmacy's Part in Society, Madison, Wisconsin, 1946, pp. 46, 47, 63.

ican Ph.D. was awarded at Yale. Hence it is not amazing that the only non-physician of the six teachers of chemistry at the New York College of Pharmacy up to the Civil War was not a born American but "a chemist, formerly of Edinburgh", Lawrence Reid, who served in this capacity from 1842-1850.[13]

The Situation at the End of the Nineteenth Century

The situation in the early nineties of the nineteenth century can be gleaned from statistical data in Hallberg's[14] "The Pharmacal Calendar for 1892" which were quoted by Edward Kremers[15] in a paper read in the same year at the meeting of the American Pharmaceutical Association held at Profile House, New Hampshire. According to these data, materia medica and pharmacognosy were at that time taught at the "thirty-five schools of pharmacy in the United States" by 18 Doctors of Medicine, 5 of whom had pharmaceutical degrees also, and by 14 people from the ranks of pharmacy without an additional medical degree. Two of the latter, furthermore, were holding Ph.D. degrees.

It is understood that the presentation of these data and their implications[16] caused all the more a heated debate as the speaker, Edward Kremers, claimed "that [as a rule] the man who has a medical education is not qualified to teach pharmaceutical materia medica, etc.[17]. Significantly he was supported by another pharmaceutical teacher in attendance holding, like him, a German Ph.D. degree, Albert Ebert[18] who, after having voiced the opinion that "the gentleman who has read this paper has given us the true gist of the matter", concluded with a statement very much reminiscent of that made about fifty years earlier by the Committee recommending a pharmacist as teacher of "the theory and practice of pharmacy" at the Philadelphia College of Pharmacy:

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13 Wimmer, Curt P.: The College of Pharmacy of the City of New York. New York 1929, p. 45.

14 Carl Svante, N. Hallberg (1856-1910), Swedish born American pharmacist, manufacturer, teacher and author.

15 Edward Kremers (1865-1941), Ph.D. of Göttingen, teacher at the School of Pharmacy of the University of Wisconsin for almost fifty years, one of the foremost reformers of American pharmaceutical education, American pioneer in plant chemistry, editor, author, pharmaceutical historian.

16 Kremers, E.: Notes on Pharmaceutical Education. *Proc. Am. Pharm. Assoc.* 40 (1892): 309-317.

17 Ibidem, p. 317.

18 Albert E. Ebert (1840-1906), German born retail pharmacist and teacher in Chicago with a Ph.D. degree obtained as a student of Liebig and Wittstein in Munich. He invented the sulfurous process for the manufacture of starch and glucose.

"We have found", said Ebert, "that [M.Ds., as professors in schools of pharmacy] to be one of the necessities in the evolution of pharmacy in this country, for we have had no trained teachers in times past, and it is only at this period that it is possible to make such a selection of men who have also a knowledge of pharmacy and of these different applied sciences that enter into the curriculum of a school of pharmacy." [19]

In the discussion it was Robert G. Eccles[20] who spoke for the teachers at pharmacy schools holding a pharmaceutical as well as a medical degree. He expressed the opinion that "the bias of minds" of the teachers with an M.D. degree whose first experience was pharmacy "is right in the direction of pharmacy and not in the direction of medicine."[21] The point of view of the M.D. teaching pharmaceutical subjects at a pharmacy school without preliminary pharmaceutical study was presented by Henry H. Rusby.[22] "It is not necessary," he said, "that a man should fail in having a knowledge of one science because he has a knowledge of another" and he concluded as follows:

"Now, it is all very well to speak of general principles, but it is quite another thing to lay down an iron-clad rule; and I do deny strenuously that because a man is an M.D., he is not competent to consider a subject from a pharmaceutical standpoint and to teach it from this standpoint. I would make the same reference to the one who is a graduate in pharmacy and not an M.D. If he has studied pharmacy properly, he is in a position to pursue original courses of study without having taken the degree of M.D. at a college beforehand, and, if he is a good teacher, to impart a very correct idea from a medical standpoint." [23]

It was in reply to Rusby that Kremers made the really decisive statement in this controversy. He agreed with Rusby as to the inadequacy of "iron-clad" rules." But his interpretation differed considerably from that of Rusby. "The time of iron-clad rules is gone", Kremers said, meaning that the time was over in which one man could hope to cover the whole field even in one science, and he wound up with this conclusion: "**It is the peculiarity of our**

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19 *Proc. Am. Pharm. Assoc.* 40 (1892): 318.

20 Robert G. Eccles (1847-1944) Scotch born Ph.G. and M.D., research and governmental chemist, author, editor of *Mercks Archives*, professor at the Brooklyn College of Pharmacy.

21 *Proc. Am. Pharm. Assoc.* 40 (1892): 319.

22 Henry H. Rusby (1855-1940), M.D., botanist, pharmacognosist, explorer, author, professor at the New York College of Pharmacy from 1888-1920.

23 *Proc. Am. Pharm. Assoc.* 40 (1892): 318, 319.

age that men must specialize to do good work."[24] It has been this need for specialization that gradually made it impossible for the M.D. to be the universal teacher in all of the fundamental sciences while, on the other hand, not excluding those who had specialized in the one field or the other.

Doctors of Medicine as Specialists in Chemistry and Pharmaceutical Botany

It was the fact of their being prominent specialists in pharmaceutical chemistry and in the field of vegetable materia medica respectively, and not their knowledge in medicine proper, which, for instance has made the Doctors of Medicine Albert B. Prescott.[25] and Henry H. Rusby most influential figures in American pharmaceutical education. It is very signifcant that both men never practiced medicine. Prescott, after having graduated from the Department of Medicine and Surgery of the University of Michigan in 1864, was appointed assistant professor of chemistry immediately after his return to Ann Arbor from the Civil War in 1865, and he continued teaching chemistry in (and later as dean of) the School of Pharmacy of the University of Michigan until his death in 1905.

As far as Rusby is concerned, he was a botanist long before he entered college. Influenced by the village school teacher in Franklin, New Jersey, the ten year old boy spent all his time collecting the flora of the area. It was an accomplished botanist who, at the age of nineteen, entered the College of Physicians and Surgeons at Columbia University in 1874. The fact that Rusby had to leave school after only one year because of financial reasons, promoted rather than disturbed his special studies. In 1876 the degreeless ex-student won a medal for his herbarium of plants of Essex County, New York. Still more, he succeeded in obtaining the support of the Smithsonian Institution for botanical expeditions into the Southwest during the years 1880, 1881 and

24 *Ibidem*, pp. 319, 320. It may be well to point to the fact that the statement of Kremers was confirmed by the contemporary development in this country of teaching in any branch of science and even the humanities.

25 Albert B. Prescott (1832-1905), M.D., author, teacher, pharmaceutical chemist. Without any drugstore experience Prescott became one of the most progressive and most influential pharmaceutical teachers in this country. Organizer and for about 35 years head of the School of Pharmacy at the University of Michigan, the first State University School of Pharmacy in this country, he set an example that was gradually followed throughout the United States.

1883. It was after all this, that Rusby returned to school for another year of medical study, receiving his M.D. degree from the Medical College of New York University in 1884. Instead of even trying to practice medicine, Rusby then undertook his successful expeditions into South America in the service of Parke, Davis & Company for the establishment of new sources of supply for known drugs and the search for new drug plants. When in 1888 Rusby accepted the position as professor of botany, physiology and materia medica at the College of Pharmacy of the City of New York, it was not a "physician" but one of the greatest American authorities in the field of pharmaceutical botany and vegetable drugs who came to introduce students of pharmacy to this important branch of pharmaceutical knowledge.

Doctors of Medicine as Promoters of Progress in Pharmaceutical Education and Recognition

It remains to see to what extent the Doctors of Medicine entering the field of pharmaceutical teaching identified themselves with the profession of pharmacy which they were to serve and what position they took in the endeavor to assure for pharmacy its proper place in society through adequate education.

Going back to the beginnings, it should be remembered that it was through the physician-teachers at the Philadelphia College of Pharmacy, George B. Wood and Franklin Bache, that pharmacists were given first a part and later an official place in the revision of the United States Pharmacopoeia. In the era of general reorientation after the Civil War, it was the M.D., Albert B. Prescott, who did the decisive step of establishing pharmaceutical education on a strictly scientific basis, i.e., as a well considered series of courses and laboratory work leading to a general understanding of the sciences concerned instead of the hitherto offered elementary trade school information intended to supplement the practical "store" experience of the pharmaceutical apprentices.[26]

It was on this basis that the later pharmaceutical reformers proceeded, and Edward Kremers made pharmaceutical education a legitimate part of general academic education in the United States of America by introducing, in 1892, at the School of Pharmacy

26 Kremers—Urdang. History of Pharmacy. Philadelphia, 1940, pp. 213-215.

of the University of Wisconsin a four year course leading to the full academic degree of bachelor of science. This, then, paved the way for pharmaceutical graduate study on American soil.[27]

Henry H. Rusby fought from the very beginning of his teaching in pharmacy for higher educational requirements for those entering the profession. He achieved the legal recognition of graduation from an accredited high school or its equivalent as an obligatory requirement for the study of pharmacy in the State of New York long before it was made a general rule for the schools belonging to the American Association of Colleges of Pharmacy. It was through his incessant endeavor that, in 1904, the New York College of Pharmacy became affiliated with Columbia University, setting an example of University connection widely followed by other "independent" schools of pharmacy.[28] Rusby was, finally, one of the men who, likewise in 1904, succeeded in achieving in the State of New York a legislative step of greatest importance to pharmaceutical education in this country, the first American law making graduation from an accredited school of pharmacy the prerequisite of state board examination and licensure.[29]

Of the two outstanding contemporary Doctors of Medicine, influential in pharmaceutical education, Rufus A. Lyman[30] and H. Evert Kendig,[31] the latter had earned his pharmaceutical degree (Ph.G.) and taught as an instructor in pharmacy at the Department of Pharmacy of the Medico-Chirurgical College of Philadelphia before he obtained his M.D. degree. After a rather short try at medical practice he returned in 1905 to pharmaceutical teaching in which he stayed ever since until his death on April 18, 1950. There is no doubt, Kendig belongs to the group of pharmacy school teachers with an M.D. degree for whom R. G. Eccles in 1892 claimed a "bias of mind . . . in the direction of pharmacy"

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27 Urdang, G.: Edward Kremers (1865-1941), Reformer of American Pharmaceutical Education, *Am. Journ. Pharm. Educ., 11* (1947):631-658.

28 Rusby, H. H.: The Significance to Pharmaceutical Education in the United States of the Consolidation of the New York College of Pharmacy with Columbia University, *Proc. Am. Pharm.Assoc., 52* (1904): 158-161.

29 *Proc. Am. Pharm. Assoc., 52* (1904): 93, 94 (appraisal of the law), 101, 102 (wording of the law).

30 Rufus A. Lyman (1875), M.D., from 1908-1947 head of the University of Nebraska College of Pharmacy, and from 1947-1950 Dean of the recently established School of Pharmacy at the University of Arizona. Editor of the *American Journal of Pharmaceutical Education* from the beginning of its appearance in 1937. Remington medalist.

31 H. Everett Kendig (1878-1950), Ph.G. and M.D., since 1907 with the Temple University School of Pharmacy, since 1932 as its dean. Remington medalist.

because of their preliminary pharmaceutical training and experience. Kendig's indefatigable endeavor to promote the general recognition of pharmacy, especially in governmental service, might well, to a rather large extent, be traced back to this "bias".

The case is different as far as Rufus A. Lyman is concerned. Lyman never studied pharmacy. But he had obtained his Master of Arts degree before entering medical school and his medical study strengthened his inborn understanding of human nature and human needs. To this M.D. the rather undeveloped state of affairs in pharmaceutical education was not a deterring but an alluring factor, a challenge influencing his decision to leave in 1908 his position as head of the Department of Pharmacology of the College of Medicine at the University of Nebraska for that of Director of the newly created University School of Pharmacy. There has not been any progressive measure in American pharmaceutical education that has not been fostered by Rufus A. Lyman and early realized in his school. He gradually has become a kind of living conscience of American educational pharmacy and he has, in his capacity as editor of the *American Journal of Pharmaceutical Education*, offered a platform for the free and profound discussion and illumination of educational problems without any parallel in pharmacy all over the world.

The Situation of Today

A perusal of the degrees held by the present staff members of the schools of pharmacy in the United States of America shows that there are hardly any M.Ds. among them. It is the research degree of Ph.D. (or Sc.D.) obtained in one of the special branches of the pharmaceutical sciences which has become more and more predominant, and it is to be expected that this advanced degree will become the officially or inofficially required prerequisit for a teaching position in an American school of pharmacy. There still are not—and in all likelihood never will be—"iron-clad rules" excluding non pharmacists from teaching positions at schools of pharmacy. But such members of pharmaceutical faculties are comparatively few in numbers and, being specialists in such subjects as biochemistry, organic chemistry, physical chemistry, micro-

biology and pharmacology, they too are mainly Ph.Ds. (or Sc.Ds.) and not M.Ds.

Does all this mean a loosening of the connection between American pharmacy and medicine? The development up to date has given proof to the contrary. Modern drug therapy asks for specialists in both fields, pharmacy as well as medicine, the ones supplementing the others and both doing teamwork in research as well as in practice, be it in industry, school, or professional service to the general public. There is no room for overlapping activities anymore. All that is required is mutual understanding of the language, the problems, and the scope of knowledge of the sister profession.

Summary

In summarizing this rather spotty survey the following statements seem to be justified:

1. Up to the time of the Civil War pharmaceutcial education in the United States of America had of necessity to be entrusted primarily to Doctors of Medicine.

2. When the development of the fundamental sciences of pharmacy asked for specialists as teachers, three kinds of M.D's still remained in the schools of pharmacy:

a. Those who were pharmaceutical as well as medical graduates;

b. those, who by inclination and specialization, were chemists or pharmaceutical botanists (pharmacognosists) rather than medical men;

c. Those whose particular understanding of pharmaceutical problems in connection with administrative talents enable them to act successfully as heads of pharmacy schools.

3. The research degree of Ph.D. (or Sc.D.) obtained in one of the fundamental sciences of pharmacy and the knowledge which it is to warrant have taken the place of the M.D. degree and the respective knowledge in the faculties of the schools of pharmacy.

Marriages

Dr. Gertrude Mary Horn, State College of Washington, and Mr. James Reavis, pharmacist of Pullman, at Pullman, August 20, 1950.

Dr. Donald D. Meyers, Butler University, and Miss Evelyn M. Kudrna of Cedar Rapids, Iowa, at Cedar Rapids, August 26, 1950.

The Six-Year Program in Pharmacy and Graduate Instruction on Leading to the Ph.D. Degree

TROY C. DANIELS

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During the past four years American pharmacy has had the good fortune to be subjected to one of the most complete and searching surveys ever conducted in a health profession. The recommendations of the Survey Committee, reslting from an unbiased and critical analysis of its findings, were in the words of the Committee, "intended to serve as the basis for proposals designed for the progressive betterment of pharmacy as a profession".[1] It should be observed that many of the Committee's recommendations have been accepted and implemented and others have been accepted in principle, yet require positive action and implementation. Unfortunately, the recommendations of the Committee as they relate to the pharmaceutical curriculum have not been fully accepted and, in my opinion, this may lead to cleavages that will prejudice and jeopardize the basic objectives of The Survey and likewise the future of pharmacy as a profession. Those engaged in pharmaceutical education cannot regard lightly the inevitable consequences that will result from a lack of unity and common understanding of our educational objectives.

It should be recognized that the pharmacy curriculum can be no better than the basic sciences on which it is developed. The duration of an educational program *per se* has no direct bearing on the type or quality of instruction; it merely provides, or fails to provide, the time necessary to develop in sequence the necessary discipline and principles that will lead to a basic and comprehensive understanding of the practices involved. There is now abundant evidence to show that pharmacy's educational objectives cannot be met in a four-year program. A professional curriculum has three distinct components, namely: A. Courses that may be characterized as general education; B. Basic courses required for an understanding of the applied instruction which must follow;

and C. Professional and applied instruction. At the four-year level the pharmacy curriculum is deficient in each of the above components and especially in the areas represented by A and B which deal with general education and the basic sciences necessary for a comprehensive understanding of the applied instruction.

Objectives of Pharmaceutical Education

A non-educator, the late Edward S. Rogers, Chairman of the Board, Sterling Drug Incorporated, once stated—"The use of specialized scientific information is, after all, more nearly a professional function than mechanical hand work. However, the pharmacist must adapt himself to the changing state of affairs. He must demonstrate that he knows his subject and that the information and advice he gives are reliable. The pharmacist will be able to fit into the new pattern to the extent that he qualifies himself to perform this professional function as well as, or better than, any other professionally trained person. If the pharmacist pursues his education with his sights set merely on being a prescription clerk in a drug store, he will never attain his full usefulness in the broad field of medicine and public health. I suggest that he must qualify himself as an expert in drugs of all kinds both new and old."

"This is a challenge to schools of pharmacy which I believe they are willing to accept. If they turn out merely tradesmen and artisans, society will give their graduates this function to perform. If they have something better to offer, in the way of professional qualifications, the pharmacist will quickly find an important place in the professional scheme of things."[2]

The impelling reasons for extending the pharmaceutical curriculum have been clearly pointed out by the Survey Committee,[1] Blauch[3], Fischelis[4], McGrath[5] and others. These need not be reviewed here, but it should be observed that there is more or less general agreement on the principle that the ideal curriculum equips the pharmacist not only with a comprehensive understanding of his profession but also with a firm sense of his responsibility to society. It should provide the flexibility to train for the various specialties within the practice of pharmacy and also give the stu-

dent a scientific background that will enable him to cope with professional problems in a creative and effective manner.

Double Standards for Pharmacy

The Survey Committee has provided background information detailing the duties and responsibilities of the pharmacist, and, on a basis of its findings, it has pointed to the need of a six-year program of education. The Committee has also recommended that the American Association of Colleges of Pharmacy and the American Council on Pharmaceutical Education continue their efforts to improve the existing four-year curriculum. On the surface these two recommendations may appear to be in direct conflict but it must be evident that this element of apparent antagonism disappears when the problems of the ideal curriculum are viewed in terms of practical realities. Not all of our schools and colleges of pharmacy are at present prepared either with the physical plant or with the staff necessary to adopt a six-year curriculum. Indeed, the number who are prepared represent a distinct minority and it can be expected that it will take perhaps as much as ten years for all of the colleges to obtain competent staff and facilities to properly offer the proposed curriculum. Even so, we cannot afford to delay the decision on what the future educational program is to be. In my opinion, double standards in professional education are undesirable and can be justified only on a basis of expediency. However, pharmacy is confronted with the unavoidable necessity of condoning double standards during this transition period.

At the present rate of training at the graduate level it is anticipated that an adequate number of professionally qualified individuals will be available to staff the schools and colleges within the next ten years. As soon as competent men are available, all schools and colleges should be able to undertake profitably pharmacy education at a higher level. Each school should be encouraged to establish the six-year program of education and training just as soon as it is feasible and the program should be mandatory for all schools not later than 1960.

Proposed Six-Year Curriculum

Prior to the publication of the Pharmaceutical Survey's recommendations on the curriculum, we at the University of California College of Pharmacy had requested the appointment of a special university committee to study curricula in pharmacy. This committee independently arrived at the conclusion that a six-year program of education and training for pharmacy is necessary to meet the desirable educational objectives. Our committee believes the present four-year curriculum should be regarded as temporary and retained only on an optional basis until a six-year program is generally adopted.

The curriculum currently under consideration consists of two pre-professional and four professional years. If the proposed program is adopted, the pre-professional years will be given by the College of Letters and Science or may be taken in another institution. The program is as follows:

Proposed Six-Year Curriculum

PRE-PHARMACY PROGRAM

First Year

	Units		Units
Chemistry 1A (General)	5	Chemistry 1B (General and Qualitative)	5
Mathematics 3A (Calculus)	3	Mathematics 3B (Calculus)	3
Foreign Language*	4	Foreign Language*	4
English 1A (or Speech 1A)	3	English 1B (or Speech 1B)	3
Military Science	2	Military Science	2
	17		17

Second Year

Zoology 1A** (General)	4	Zoology 1B (General	4
Physics 2A	3	Physics 2B	3
Physics 3A	1	Physics 3B	1
History 17A (American)	3	History 17B (American)	3
Elective	3	Botany 12 (or equivalent)	4
Military Science	2	Military Science	2
	16		17

* Normally the student will be expected to fulfill this requirement in one language.
** The College of Pharmacy will recommend the adoption of a combined four-unit course in Zoology if and when it is made available. This will replace Zoology 1A-1B.

Professional Curriculum

First Year

	Units		Units
Pharmacy 50A (Orientation and Calculations)	2	Pharmacy 50B (Inorganic)	2
Anatomy 50*** (Human and Histology)	4	Physiology (Mammalian)	6
Chemistry 11A (Organic)	4	Chemistry 11B (Organic)	5
Chemistry 5 (Quantitative)	3	Pharmaceutical Economics	3
Pharmaceutical Economics	3		
	16		16

Second Year

Pharmacy 105A (General and Theoretical)	4	Pharmacy 105B (General and Theoretical)	4
Pharmacognosy (Basic)	3	Bacteriology 11*** (Medical)	5
Pharmaceutical Chemistry 100 (Chemistry of Natural Products)	4	Pathology 125 (Lecture and Laboratory)	4
Physical Chemistry 109	4	Physical Chemistry (Advanced)	2
Biochemistry 100A	2	Biochemistry 100B	2
	17		17

Third Year

Pharmacy 115A (Dispensing)	4	Pharmacy 115B (Dispensing)	4
Pharm. Chemistry 110A (Synthetic Medicinals)	2	Pharm. Chemistry 110B (Synthetic Medicinals)	2
Pharmacology and Toxicology	6	Pharmacognosy (Advanced) (Antibiotics)	3
Pharm. Chemistry 114 (Synthesis of Medicinals, Lab.)	3	Pharm. Chemistry 120 (Official Assays)	3
Pharmacy Laws 103	2	Public Health 100	3
		Elective	2
	17		17

*** To be re-numbered.

Fourth Year

	Units		Units
Pharmacy (Advanced) (Product formulations)	4	Pharmacy (Advanced) (Special problems)	4
Pharmacy (Seminar)	1	Pharmacy (Seminar)	1
Orientation in Medicine	2	Public Health (Advanced)	2
Pharmaceutical Chemistry (Mode of action of drugs)	3	Microbiology (Medical)	3
Electives	6	Electives	6 - 9
	16		16 - 19

Electives are to be selected from the courses listed in a Group Major. There are four Group Majors, viz: Retail Pharmacy; Food and Drug Analysis; Hospital Pharmacy; and Manufacturing Pharmacy. With the approval of the Dean a student may select courses other than those listed under a given major.

Electives

Retail Pharmacy

Pharmacy 122	2
Pharmacology 105	2
Pharmaceuatical Chemistry 130	2
Pharmacy 125	2
Pharm. Administration	2
Drug Marketing	2

Hospital Pharmacy

Pharmacy 122	2
Pharmacology 105	3
Pharmacy (Hospital Pharmacy)	6
Parenteral Solutions	2
Pharmacy (Manufacturing)	6
Pharm. Administration	2
Drug Control (Bio & Special Assay)	2
Pharmacognosy (Advanced Antibiotics)	2
Clinical Lab. Methods	2

Food and Drug Analysis

Pharmacy 122 (History)	2
Pharmacology 105	3
Pharmaceutical Chemistry 126	3
Pharmaceutical Chemistry 125	3
Pharmacognosy 144	3
Chemistry 150	3
Chemistry 100	4
Drug Control	2

Manufacturing Pharmacy

Pharmacy 122	2
Pharmacology 105	3
Pharmacy (Manufacturing)	6
Pharmacy 125	2
Parenteral Solutions	2
Drug Control (Bio & Special Assay)	2

This program conforms quite closely to the recommendations of the curriculum committee and the only unique feature it contains is the provision for orientation in medicine. This requirement is included largely for the purpose of preparing the pharmacist for more effective collaboration with the physician. Our committee believes instruction in orientation in medicine will serve to reduce rather than increase the tendency for the pharmacist to "counter-prescribe" and it will also serve to focus the pharmacist's attention on the public health aspects of his service. It is of interest to note that a majority of our committee members are graduates in medicine now serving as chairmen of divisions in the School of Medicine (anatomy, physiology, pharmacology, pathology and public health). This fact is called to your attention in order to show that responsible members of the medical profession are interested in more effective collaboration between the pharmacist and the physician.

The proposed curriculum presents in sound sequence, the required basic courses in the physical and biological sciences necessary for a comprehensive understanding of the applied and professional courses in the program. It offers the flexibility to train for the various pharmaceutical specialties and thus provide for

individual student interests in one of four general fields. It is a professional program and leads to a professional rather than an academic degree. Graduates will be awarded the professional degree of Doctor of Pharmacy.

Professional versus Academic Degrees

Some schools have already announced the establishment of a six-year program of education and training leading to the professional degree of Doctor of Pharmacy.

At the present time the four-year curriculum uniformly leads to the bachelor's degree in pharmacy. Those students who qualify for admission and complete the graduate requirements in pharmacy, pharmaceutical chemisty, pharmacognosy and pharmacology are awarded the M.S. and Ph.D. (academic degree) in these respective fields.

The introduction of a six-year curriculum leading to a professional doctorate degree in pharmacy raises the point of distinction between professional and academic degrees. The Ph.D. degree in a science normally implies that the recipient has specialized in an academic rather than in a broad professional field of learning. Pharmacy is a professional field which includes a great deal of applied instruction making use of pharmacognosy, chemistry, pharmaceutical chemistry, biochemistry, physiology, pharmacology, etc., as a background for its development.

A number of graduate schools have not certified pharmacy as an approved field in which to award graduate academic degrees. It should be pointed out that this is not because pharmacy fails to offer challenging problems in research and study. It merely reflects the fact that once a research problem in pharmacy has been defined for scholarly pursuit, it becomes apparent that the field of study falls within the province of one or more of the well-established basic sciences. As such, therefore, the title pharmacy embraces many disciplines and accordingly it is not recognized by these graduate divisions as a distinct academic entity.

On the other hand, the very fact that pharmacy, like medicine, dentistry and other health professions, embraces so many basic disciplines, is a logical reason for pharmacy to be regarded as a professional area for which professional degrees should be award-

ed. This same argument does not apply to pharmaceutical chemistry, pharmacognosy and pharmacology and these areas are quite well recognized as suitable for academic degree awards.

In the words of Jacques Barzun—"the Ph.D. has become the union card of the American college teachers."[8] I think we can all agree that it is important that the degrees granted in pharmacy shall be well recognized and accepted both by the lay public and by educators in other fields. The M.D. and the D.D.S. degrees are well accepted and we must exercise every care to see that the professional degree in pharmacy receives the same recognition. This recognition will come when the recipients of the proposed professional degree earn a place for themselves in pharmacy practice and in pharmacy education.

Implementation of Pharmacy's Educational Program

Educators in pharmacy are urged to consider the implications involved and the confusion that will follow if we should fail to agree upon educational objectives at this time. It should be generally appreciated that we are confronted with the necessity of going through a period of transition during which two or more types of educational programs will be in use.

There is a strong tendency for those who acquire fixed opinions on a point of discussion to lose their overall perspective. This principle when applied to the present problem in pharmaceutical education suggests that there may be danger of developing a cleavage in the ranks of pharmacy educators prejudicial to the future welfare of pharmacy. One of the methods of reducing or eliminating this hazard is for us to resolve at the outset to adopt an attitude of tolerance and respect for those who may in all sincerity, disagree with the expressed opinion of the majority. This philosophical viewpoint will create a spiritual environment that will encourage objective thinking and permit an unbiased approach to the resolution of our problems.

Those who fear the six-year curriculum because of local administrative problems, must gain the vision and courage to approve sound educational progress irrespective of their own circumstances. This should be done with the realization that local conditions

change and also that an ideal program of education in pharmacy cannot be brought to fruition in a short period of time.

Dr. Elliott, in conducting The Pharmaceutical Survey, observed and commented on "the tragic lack of unity in the profession." Let it not be said that this lack of unity prevails in pharmaceutical education.

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The Terminal Course in Pharmacy

3. Undergraduate Research as a Means of Fostering Creative Thinking*

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One of the primary objectives in pharmaceutical education is to develop creative and independent thinking among students of pharmacy. This objective can be included justifiably in the objectives for every course in the curriculum, in fact it has been given previous consideration in the paper of this series[1] that deals with objectives for the terminal course in pharmacy. The attainment of this objective in pharmaceutical education by and large has not been achieved. The purpose of this paper is to suggest

* Presented before the Conference for Teachers of Pharmacy, Atlantic City, 1950. This is the third of a series of papers, the first two of which were presented at the Pharmacy Seminar at the University of Wisconsin in July, 1949, and presented in abstract in the Am. Jour. Pharm. Educ. Vol. XIV, page 96.

the inclusion of undergraduate research in the terminal professional course as one of the methods for promoting creative thinking.

The American system of education is built around the following general methods of instruction: (a) lecture, (b) lecture-demonstration, (c) discussion-demonstration, (d) laboratory, and (e) textbook-recitation. These methods were discussed at some length at the Madison teachers' seminar last summer[2]. Instruction built around these methods provides compact, specific, and well-controlled teaching, thereby lending itself to the coverage of the large amounts of material required in secondary, college, and university education. In order to understand our present pattern of teaching, it is necessary to realize that it is a natural evolvement in educational development in the United States. Prior to the seventies and the eighties of the past century, educational curricula in this country were considerably restricted in content. President Eliot of Harvard[3] was one of the leaders who broke these restrictions by encouraging the inclusion of specialized knowledge that was then available in European universities. This marked the beginning of the free elective system of education in this country. It is only natural that this freedom led to educational programs that were academically unbalanced because of the heterogeneity of selected courses. The modification of this extreme developed the concept of majoring, the practice of which has been well-suited to the vast amount of knowledge resulting from the academic specialization of the past fifty years. With an increase of knowledge and with an expansion of areas of learning, curricula in higher education have lost much of their flexibility thereby diminishing the time for elective pursuits, available to the students. It has been natural, then, to develop teaching methods that would most efficiently cover the mass of basic material for the ever-growing numbers who seek learning. Hence, our present methods of instruction have been born from a need of expediency in teaching.

We have been guided by the needs for teaching, rather than by the educational needs of the student. Stimulation of the individual, creative, imaginative, and independent thinking, and searching for knowledge are vital factors in learning. Do the present methods of teaching provide the student with the desired learning atmosphere and opportunity? Only a few teachers have the dynamic

spark that awakes the inherent curiosity in students and fosters a thirst for knowledge to the extent that they initiate individual and extracurricular work. This is not to be construed as a criticism of contemporary teaching, but nevertheless, it is a point of reckoning as we evaluate our present educational system. Great masses of material in secondary schools, junior colleges, liberal arts colleges, and even in portions of the curricula in colleges within the university are of such nature that they must be presented as blocks of basic and introductory material. However, in upper division courses in the university or in applied areas in professional colleges, the continued use of the same teaching pattern may require modification if the student is to obtain the real joy and stimulation in learning to which he is entitled. Hutchinson[4] recently pointed out that the "university should be regarded as a place of learning, and not as a place of teaching." He continues by saying that "it is the basic function of the university to emphasize, as vigorously as possible, that intellectual activity is one of the great pleasures of life, for in so doing the university performs the fundamental duty of encouraging us to know enough to implement the will to set our house in order."

The attainment of an atmosphere conducive to the learning experience for the student results from a somewhat indefinite focusing of many factors. A discussion of these factors would include the external environment as influenced by libraries, laboratory equipment, and general facilities; the appreciation demanded for fundamental concepts and the dynamic way in which these are applied and through which they become meaningful; the encouragement provided for students who are rich in ideas and who are seeking new truths; and the motivation provided by the scholarly attainments of the staff and the personal inspiration provided through their counsel.

The growth of organizations, like that of individuals, follows patterns in which there is lack of uniformity regarding both the rate and extent of growth in the component parts. Viewing pharmaceutical education in retrospect we realize how tremendous has been the growth of certain areas during the past thirty years; contrariwise, certain portions have seemingly failed to grow. This need not be alarming if we can identify those areas that are mal-

nourished and inaugurate measures that will initiate and sustain growth. One of the great tragedies in our pharmaceutical inheritance is the fact that the pharmacist has been willing to let someone else do much of his thinking for him. This has been one of the significant factors retarding the professional growth in this country. It becomes of paramount importance, therefore, that, as we enter a new growth phase in pharmaceutical education, continued emphasis be placed on those concepts and methods that will encourage creative and independent thinking among students of pharmacy.

The terminal professional course in the pharmacy curriculum provides an excellent opportunity for applying methods that will encourage creative thinking. There are numerous ways by which this may be accomplished, although one that has been particularly useful to us at the University of California College of Pharmacy is the assignment of selected research problems for study and solution. Our terminal professional course is designed so that the first semester laboratory and didactic instruction emphasize the basic prescription disciplines, techniques, and concepts. The second semester is devoted to the specialized techniques such as buffered and isotonic solutions, parenteral medication, vehicles for external medication, etc. The program of the second semester has sufficient flexibility to permit the assignment of selected problems to groups of students without interfering with the formalized intsruction.

The following describes both the objectives and the application of the program.

A. **Objectives:** (1) to provide a learning experience for the student that will encourage him to think creatively and independently; (2) to provide the student with a glimpse of the scientific method as it is applied to the solution of pharmaceutical problems; (3) to supplement the existing literature in pharmacy, thereby contributing teachable material for the future.

B. **Application:**

1. **Selection of the problem:** The success or failure of such a program can reside with the choice of problems. Caution must be exercised in selecting problems that will meet the level of competence of the student group. Some students have a natural intuitiveness that enables them to comprehend more profound problems, while others have a lower level of

ability. Students are eager for problems for which they see application in pharmaceutical practice. However, problems of application are potentially sterile unless they reveal clearly the basic principles upon which the application is based. This should be the fundamental precept in pharmaceutical research. The following have been helpful sources for the selection of problems: (a) past teaching and research experience, (b) fundamental research in other fields with possible pharmaceutical application, (c) new drugs and chemicals of pharmaceutical interest, (d) contradictory and erroneous literature. The following titles are representative of the problems currently being studied: "The influence of alcohol and pH on the solubility of alkaloids in the presence of (a) tannic acid (b) glycyrrhizic acid"; "The stabilization of simple solutions containing pharmaceutically important phenolic substances"; and "Problems in the stabilization and sterilization of ophthalmic solutions."

2. **Assignment of problem:** Problems are assigned to groups of two to six students, one of whom is designated as group leader. Leaders are chosen on the basis of scholarship and general administrative qualities; they are interviewed for interest and willingness to serve before group selections are made. The leaders are often helpful in making personnel assignments. A conference is held between the group leader and the supervisor to discuss the problem and to make a tentative outline of approach. Significant literature is suggested to the leader at this time. The leader is responsible for assembling his group and presenting the problem to them. After the group has discussed the proposed outline of work, the leader drafts a written prospectus including a statement of the problem, the experimental design, the distribution of responsibility within the group and other pertinent data. This is submitted to the supervisor for his approval or rejection.
3. **Supervision of problem:** Much of the success in attaining the objectives of the problems lies in the supervisor's ability to direct the students' needs and to be available for frequent conferences. The group leader's ability to apportion responsibility is likewise of great significance. Progress reports, either oral or written, are requested every fourth week and a final written report is required at the end of the semester.
4. **Apportionment of time:** By introducing the problem program at the beginning of the semester, the planning, the library work, and the procurement of materials, etc., can be accomplished with a minimal of extracurricular time. In our program we have allotted three weeks of regular laboratory time

late in the semester for performing the experimental work, thereby preventing an imposition on the students' apportioned time. Many students become sufficiently interested in their problems to devote extracurricular time to their study.

The use of research techniques is one of several methods that may be used effectively in stressing original thinking. Some curricula are not amenable to this method, and certain schools present problems in manpower and physical facilities. However, the fact still remains that there is need in pharmaceutical education for an alertness on the part of instructors, particularly those teaching professional courses, to create situations in teaching that will spark original thought. The men and women entering pharmaceutical practice today have the scientific background to resolve problems arising in their professional experiences, yet, very little of our literature in pharmacy comes from the practicing pharmacist. This is in marked contrast to the other health professions in which practitioners are contributing significantly to the literature of their respective fields. This basic concept must be instituted in the colleges. Many practices in pharmaceutical education today can be improved without introducing major changes. One practice in the opinion of the authors, deserves special mention. The U.S.P. and the N.F. are standards for drugs in the United States and its territories and they should be regarded as reference books. Yet these books are often used as text books and the contents therein are regarded as the final word in formulation. No one denies that official preparations are of proven therapeutic efficacy and no one will deny that many of them possess economic advantages when compared to similar preparations. Students should be encouraged to view a preparation in terms of its therapeutic agent, its physical properties, and the general problems in its formulation. There are doubtless many formulas for a given preparation each with considerable merit, but it does not follow that the official preparation excels on the basis of official acceptance alone. By changing a point of approach to official preparations no distortion to the student's concept will result, but the student's mind will remain open thereby making it possible for him to think impartially in terms of his background and training.

The attainment of this objective in pharmaceutical education will not be accomplished without considerable thought. A few

simple changes in teaching methodology will not accomplish the result. However, when teachers in the colleges of pharmacy develop a philosophy of education that has as a major premise, the development of independent thinking, changes and modifications in teaching will have a meaningful purpose.

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A Visit to German Pharmacy in 1950*

An Impressionistic Report
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1. *The Antecedents*

At the very moment when the preparative period of Hitlerian aggressiveness changed into its phase of brutal attack against everything that was (or seemed to be) in the way of the proclaimed "Thousand Year Empire" of Nazi-German world domination, this writer left Germany (May 1938) and found in the United States of America a new home not only for himself and his family, but for the branch of science which he had made his lifework: the history of pharmacy.

He had left behind quite a number of friends. Some of them, a small minority, had proved themselves so strong in mind, character and conviction that they resisted all allurements by those in

* This report was written at the instigation of Mr. W. K. Fitch, Editor of *The Pharmaceutical Journal*, the official organ of the Pharmaceutical Society of Great Britain, in the October 28th issue of which it was printed. Permission for this parallel publication was granted upon request of the Editor of the Am. Journ. Pharm. Educ.

power. Others had tried to compromise and to interpret Nazi ideology and action in such a way that cooperation seemed possible and even a necessity. With Nazi dictatorship gone down in infamy, those who had resisted as well as those who had compromised found themselves disappointed and bewildered. Letters poured in from all parts of Western Germany (for obvious reasons there came only a very few from the Russian Zone) filled with explanations and apologies. Throuugh all of them, as varied as they were in contents and tone, was runnig one and the same motif: that of the human rights of every individual German, and the German people on the whole, to be helped in their attempts to get back on their feet ideologically as well as materially. There was a very far going willingness to accept the ideas of western democracy. There was a very strong reaction against any attempt at imposing upon the German people or German institutions present-day forms of this democracy as they had developed under the special circumstances in other parts of the world, be it France, England or the United States of America.

Peculiarly enough, it was pharmacy in the American Zone of occupation where such an imposition was tried. No wonder that now this writer was approached by his German friends and asked for his opinion and even intervention. Should he care? After all that had happened? He thought he should. Hence he decided to include a visit to Germany in his trip to Europe devoted mainly to his participation in a Congress on Social History of Medicine at Para, Switzerland (August 9-11) and in the VI International Congress for the History of Science at Amsterdam, Holland (August 14-20).

2. *Back in Germany*

It took fifteen flying hours from New York to London. It took less than two hours from London to Frankfort on the Main. But the fifteen hours flight over the Atlantic meant but an easy transference from one part to another of the same world. The petty two hours required for crossing the English channel into Germany meant—at the time being—the transference of the traveller from one world to another. On the one side, in the United States and in England, the scene is dominated by the feeling of

responsibility not only for our own future but for that of the Western World as a whole. On the other side, in Germany, the feeling of being a responsibility of the Anglo-Saxon world prevails, and the modifications of and the reactions to this feeling, the factual basis of which is bitterly denied (although its substantial results are more or less enjoyed), are at the bottom of almost everything in Western German thought and politics.

The opposition against anything that the Germans consider an interference with their traditional way of life is naturally especially strong whenever this interference apparently is not caused by any political or economic necessity but merely by the attempt to enforce "democracy" through imposing one of the non-German present-day stages of development onto a situation grown up under quite different conditions. It has been for this reason that hardly another decision by any of the occupation administrations in Western Germany has met so much opposition within and even without pharmacy as the order of the American Decartelization Office in Frankfort on the Main to replace the centuries-old German system of governmental limitation of retail pharmacies. For the traditional system of restricting the number of pharmacies to a definite relation to the number of prospective patrons and adequately distributing these shops over the country was substituted the right of every registered pharmacist to open his establishment wherever he likes it. There cannot be any doubt as to the disruptive effect of such a sudden change of system. Neither the English nor the French occupation administrations in Germany have as yet followed the American example. Under these circumstances it is but natural that those interested in sowing mistrust are pointing to the fact that the attempt of the Americans to impose their system of retail pharmacy on Germany has found a counterpart only in the Russian occupation zone where the nationalization of the pharmaceutical retail shops has been started.

It was, naturally, this situation which the secretary of the semi-official organizations of retail pharmacy, the "Westdeutschen Apothekerkammern", Dr. Hans Meyer, discussed with this writer when driving from the airport to the hotel and during a later visit.

As is well known, Frankfort belongs to the hard-hit German cities. Entire blocks, especially in the part around the centuries

old "Römer" (the city hall) have disappeared. On the other hand there is much rebuilding going on, and the bombed out pharmacy shops have almost without exception found a new place, although sometimes a more or less tentative one.

This writer had one little experience which he thinks to be significant. A purchase of his in a Frankfort store was wrapped by a clerk whose work apparently did not meet with the approval of his superior, an elderly lady. She took the item out of the young man's hand and started to rewrap it. The humble remark of this writer that he was satisfied with the wrapping by the clerk was rebuked by the lady. "Oh no!" she said, "if at all, then thoroughly."

From work in the arts and sciences through the conduct of war, concentration camps and gas chambers and down to the wrapping of a package; it has always been the same; "if at all, then thoroughly"! If this writer would have had any doubt, now he knew it for sure, he was in Germany again. He simultaneously had become aware of the real German problem. It lies in the necessity of coupling this German thoroughness of action with an equally deep going thoroughness in recognizing and accepting human responsibilities.

3. *German Pharmaceutical Convention at Berlin*

Berlin, terribly destroyed, with one part of it turned into a politically hostile camp, threatened in its connection with the mainland whose capital it was and still claims to be, has become the symbol of the German will and ability of self-preservation. The "Deutscher Apothekertag" taking place at Berlin from July 11-15 was far more than one of the usual annual meetings of pharmaceutical associations (at the time being naturally restricted to Western Germany) and offered an imposing manifestation of the intention and ability of the German pharmacists to be the masters of their destiny.

The resolution, adopted at Berlin in opposition to the decree of the American Decartelization Office at Frankfort on the Main and accepting the draft of a Western German Pharmacy Act, was affirmed by over nine-tenths of those who had made use of their right to vote (86.7 p.c.). The draft shall, as the resolution

puts it, "loosen the previous rigid concession system by making it more liberal, without removing the influence of the governmental agencies that has to be retained in the interest of public health."

According to the draft there are personal and substantial requirements for a pharmacy license. The personal are the necessary general legal and physical ability of the applicant and service of at least five years in a German pharmacy (or recognized equivalent) after the receipt of the pharmaceutical diploma. As to the substantial requirements the draft states the following (§ 3):

"The license is to be denied

a. to applications if the applicant during the five years preceding the date of his application has worked in a non-pharmaceutical activity for longer than two years.

b. to applications concerning the establishment or transference of pharmacies only if according to location, number and density of population it cannot be expected that the pharmacy will be able to permanently warrant an unfailing supply of drugs to the populace in compliance with the legal requirements. The licensee can be obligated, in the interest of an adequate supply of drugs to the populace to establish the shop in a particular location."

It remains to be seen whether the authors of the "Apothekertag" resolution will find their hope confirmed concerning the approval of the draft by "the occupation powers, the German legislator and the German public."

Throughout the entire convention a strong desire for the revival of international intercourse made itself felt and was expressed again and again. It was exchange of students and teachers as well as the admission of German pharmaceutical organizations and individual pharmacists into the respective non-German and international groups, congresses, etc., that was urgently looked for. It is of general interest that the visitors from the Eastern Zone refrained from any active participation in the discussion.

4. *German Pharmaceutical Industry*

The astounding as well as admirable intensity of life and of work amidst ruins and in the face of a permanent threat of political inconveniences if not even dangers was still more underlined by two exhibitions shown on the occasion of the "Deutscher Apothekertag." The one called "Für Berlins Gesundheit" (for the health of Berlin) offered an impressive insight into the work of the

municipal institutions of the city of Berlin devoted to public health and welfare. The other, the "Pharmaceutical Exhibition" was not less imposing. To quote from the "Pharmazeutische Zeitung" (1950, No. 29): "Here the pharmacist is offered chemicals, drugs, ointments, bandages, apparatus, literature, in brief everything that he needs in a peacetime quality and presentation . . . an exhibit of such an excellence has only seldom been shown."

It is understood that the big concerns were represented, e.g., E. Merck-Darmstadt, Farbenfabriken Bayer-Leverkusen, Farbwerke Höchst, C. F. Boehringer & Söhne-Mannheim. But there was a number of middle sized and comparatively small plants exhibiting a variety of products. In the booths of the publishers of pharmaceutical literature (Springer Verlag—Berlin, Verlag Dr. Roland Schmiedel — Stuttgart, Arbeitsgemeinschaft medizinischer Verlage—Berlin, Apotheker-und Chemiker Verlag—Berlin—Charlottenburg, Govi—Verlag—Hamburg) an amazing number of books on all possible subjects and of attractively styled journals proved the up to dateness of the scientific and publishing endeaevor in the field. It is remarkable that not one of the East German pharmaceutical concerns was represented.

5. *Meeting of the Society for the History Pharmacy*

The hectic days of the "Deutscher Apothekertag" were followed one week later, from July 21 to 25, by the meeting of the "Internationale Gesellschaft für Geschichte der Pharmazie" at Rothenburg o.d. Tauber. (It might be stated that the debatable designation as "international" was decided upon last year at the Hamburg meeting of the "Gesellschaft"). In the beautiful setting offered by this unique little town, a real jewel of sixteenth and seventeenth century architecture, and under the excellent leadership of Professor Häfliger—Luzern, Mr. G. E. Dann—Kiel and Dr. Fritz Ferchl—Mittenwald, there developed an atmosphere of mutual understanding which will remain unforgotten by all who had the privilege of attending the meeting. There was an amazing number of interesting and well presented papers testifying to the high level which the study of the history of pharmacy has reached in Germany. Of particular importance was the great number of

comparatively young men among the active participants warranting the continuity of the work and its high quality.

The meeting in Rothenburg was followed by a visit to Bamberg and to the remnants of the "Deutsches Apotheker Museum", formerly in München, which have found a home in rooms of the former residence of the archbishop of Bamberg. Unfortunately, just the best items were lost in the post war confusion, destroyed or stolen. Under the supervision of Dr. Ferchl these remnants have been arranged into an exhibition which again serves its purpose of information and professional representation.

It might be mentioned that there exists, in Waldenbuch, a suburb of Stuttgart, a beautiful private collection of items of pharmaceutico-historical interest, brought together and owned by the pharmacist Walter Dörr and connected with his pharmacy.

6. *Finale*

Most important of all: The younger generation in Germany, especially the pharmaceutical academic youth to whom this writer spoke, has become sober. It refuses glib phrases of whatever kind and from whatever side. They want peace and work and international understanding and cooperation. There cannot be any doubt: German pharmacy, like the German people on the whole, is perhaps bent, but by no means broken. They are coming again, and the sincerity of their endeavor and the quality of their work make it impossible not to recognize them. The only problem is to anchor them so firmly in the family of nations that those among them who —for whatever reasons—might like to work against this family instead of within and with it, are not given an opportunity to do so. The way to achieve that seems to this writer to be the creation of a solid European Federation within the framework of a solid World Federation.

New in the Family

John Thomas Perkins.—Born July 19, 1950, son of Dr. and Mrs. Alfred J. Perkins, University of Illinois.

Jeffrey Roy Hammarlund.—Born September 26, 1950, son of Prof. and Mrs. E. R. Hammarlund and great-grandson of the late Dean-Emeritus C. W. Johnson, University of Washington.

The Pharmaceutical Survey's Contribution to the Improvement of the Teaching of Pharmacy*

JOSEPH B. SPROWLS
Temple University

Listening to Chaplain Abernathy of Rutgers University recently your speaker was impressed by the title of his address, *"NEW CARTS FOR OLD ARKS."* Chaplain Abernathy's theme was based upon a verse in II Samuel, Chapter 6, in which it is related that the Israelites set the Ark of the Lord upon a new cart to carry it into Jerusalem. He compared the ancient situation with that which exists today and pointed out that in our rapidly changing society of modern times it is necessary for men to develop new methods for carrying on the established concepts and traditions of the past.

As your speaker listened, he said to himself, "This is the situation which faces the Teachers of Pharmacy today. We, too, are faced with the necessity of developing new methods for carrying forward the best concepts and traditions of pharmacy. We must alter our teaching methods to meet the challenge which is offered by modern pharmacy. To parallel Chaplain Abernathy's thought, we must develop new carts on which to carry forward the "Ark of pharmacy."

A few days later in a class in the History of Pharmacy a student asked if it could be said that Paracelsus contributed anything to the progress of pharmacy. After a few moments reflection, your speaker replied somewhat as follows: "Disregarding any specific contribution which he may have made—and there were some—Paracelsus greatest contribution to Pharmacy was probably that which any reformer makes to a field of study. For too long medical science had been complacent—steeped in the empiric teachings of Galen—satisfied that everything was known which could be known about medicine. While the methods which he used in presenting his principles left much to be desired, Paracelsus at

*Address of the Chairman of the Conference of Teachers of Pharmacy at the 1950 meeting at Atlantic City.

least forced physicians to examine their concepts more critically, forced them to seek for the proof of suppositions which they had long accepted."

Again your speaker found a parallel in our own situation. Pharmacy teachers, too, have had recent contact with a critic. While we apologize to Dr. Elliott for mentioning his name in the same sentence with that of Paracelsus (since their personalities are in no sense the same) the recent Pharmaceutical Survey brings to mind the effect which Paracelsus had upon the teaching of medicine in his day. The Pharmaceutical Survey has had a profound influence upon our thinking; there are indications that the entire teaching of pharmacy may be altered. We feel safe in saying that any changes which may be effected will not be long in coming, since teachers in our day are alert to their responsibility and are receptive to valid suggestions.

In spite of the continuous effort which has been made in the past to keep our pharmaceutical curriculum in harmony with the professional practice, The Pharmaceutical Survey has pointed out some rather obvious shortcomings in our professional curriculum. To attempt to enumerate these would entail a restatement of the recommendations concerning the curriculum, and these have been published for all to read. We will not apologize for any delay which has already occurred in their implementation beyond stating that in all institutions there is reluctance to alter an established pattern which is functioning successfully until it can be proven that a change is advantageous. Regardless of whether they have been implemented, the recommendations of The Survey have had a delightfully stimulating effect upon the minds of those who are concerned with the construction of pharmaceutical syllabi. Particularly encouraging to those who think in terms of continual progress has been the warm reception which some of the recommendations have been given.

The proposal to lengthen the course of instruction is one of those which has not enjoyed a warm welcome—at least in some areas. The suggestion is like a seed which has been planted in the soil and we are anxiously waiting to see whether a seedling will sprout. In som areas the seed has been exposed to chilly blasts and damaging floods. If it fails to produce a virulent growing

plant, only future events can determine whether the seed was not fertile or whether it fell upon barren ground. But whether we concur with the proposal or not, I think all of us would agree that much benefit has accrued from our discussion of the recommendations presented on the basis of the Survey findings.

Surely no one can feel that our curriculum was beyond reproach, Surely no one can believe that students are receiving in our colleges of pharmacy the broadening endcation which one has every reasonable right to expect from a college education. Even the 18 hours of general courses allowed by many colleges is pitifully inadequate when compared to the amount taken by the average college student and when evaluated in terms of background preparation for a lifetime of public service.

Surely few of us can believe that the average school of pharmacy graduate who enter retail pharmacy is adequately prepared in the field of business to undertake the personal management of a business—which is nearly always the ultimate goal. Was The Survey Committee, then, in error in recommending the incorporation of more business and economic courses in our curriculum?

Speaking as a teacher of pharmacy, this firm comment I wish to make: the room for additional courses which are needed must not be created at the sacrifice of the professional courses in pharmacy. We have seen more than one proposed revision of the four year curriculum in which one must almost take a second look in order to find the courses in pharmacy. This approach is not the solution to our problem. If we must sacrifice something, let us not sacrifice those courses which insure professional competency. The teachers of Pharmacy must be alert to the inroads which are being made upon our allotted hours for instruction. We make this statement not in the interest of selfish motives, but with the realization that we and we alone are competent to judge the amount of instruction in the subject of pharmacy which is required to train a good, competent, reliable pharmacist. We must not allow those well-intentioned individuals who are primarily interested in the development of other areas of instruction to force us to retrench too far. If the educational program must be lengthened in order to meet the need, let us lengthen it. Let us not sacrifice our professional courses to maintain a *status quo*.

Last summer at Madison, Wisconsin, the members of this conference were afforded the opportunity of carrying out one of The Survey proposals when we convened for a Seminar of Teachers of Pharmacy. While the experience was not a unique one among members of pharmacy faculties (it being similar to the Plant Science Seminar), the program was, nevertheless, one of the memorable ones of our lives. The atmosphere of informality which prevailed made it possible for all to speak their thoughts freely and to discuss extensively the problems which confront all of us in the teaching of modern pharmacy. We were particularly impressed by the degree of interest which was displayed in the modernization of the professional curriculum. The atmosphere was liberal; there was a tendency to abandon tradition and to bring forth a completely new method of teaching which would be free from empricism and based upon fundamentals.

As is always the case, however, many questions were left unanswered. Time simply did not permit the complete discussion of all topics. Consequently, the officers of this conference who were present felt that we should devote this year's program of our Teachers Conference to a further consideration of some of the questions which in our opinion were deserving of further explanation than was possible at the time of the Seminar. A survey revealed that there was much interest in a proposed course referred to in the seminar program as Physical Pharmacy. Although the general objectives of this course were excellently presented to the Seminar Group by Drs. Goyan, Higuchi, and Busse, we were hopeful of learning more concerning the course, particularly with respect to its position in the pharmacy curriculum and its influence upon the content of other courses. With these objectives in mind we have made this topic one of the major items for discussion this morning.

A second topic in which there was much interest was that of General Pharmacy II. We believe that much confusion exists concerning the content of the course now referred to as General Pharmacy II and we are hopeful that at this time we may learn more concerning the proposed syllabus for this course, especially since the person presenting the major paper in this area is known

as a proponent of the newer approach—if we may take the liberty of using this term—to the teaching of pharmacy.

Finally, our Vice Chairman, Dr. Brodie, will present a paper dealing with undergraduate research in pharmacy—a topic which is currently of interest in several of our schools.

One of the primary concepts upon which this program was constructed was the belief that "an ounce of discussion is worth a pound of paper" (the latter is said with apology to those who have prepared formal papers); consequently, ample time has been left for discussion and we hope that those present will not hesitate to ask questions or be prepared to contribute remarks during each of the discussion periods.

General Pharmacy in the Pharmaceutical Curriculum*

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Introduction

While I was hesitating to accept this assignment to speak on the subject of General Pharmacy in the Pharmaceutical Curriculum, I received a letter from the Chairman of this Teachers' Conference which stated: "Someone needs to do a real crusading job among the teachers of Pharmacy to convince us that we can do something more than teach empiricism in Pharmacy". Also several possible topics all revolving around modernization were suggested such as: "What can we do to modernize the teaching of General Pharmacy?" "How can General Pharmacy be modernized?" and "Is General Pharmacy of any value to the modern pharmacist?"

While I finally and reluctantly accepted the assignment, I am afraid that I am neither a crusader nor a modernizer. Nor am I

*Presented before the Conference of Teachers of Pharmacy at the 1950 Atlantic City meeting.

convinced that the job which needs to be done here is merely one of modernization. I have seen too many drug stores modernized by putting up a new "front". I believe we are concerned here with something more fundamental. I will, however, quote a crusader in Pharmacy at this point and recall to you that early in The Pharmaceutical Survey the Director of that Survey, Dr. Edward C. Elliott, made the following statement:

> **"There was an old profession of Pharmacy. There is going to be a new profession of Pharmacy."**

May I interrupt this quotation to point out the absence of the present tense?

> **"The Pharmaceutical Survey has been concerned with the nature, the standards and the problems of the new profession resulting from the influence of modern science, economics and education. Although many of the elements of the old profession remain, the new profession tends to assume a distinctive form and unique functions. This form and these functions have been the center of the constructive efforts of The Survey."**

Under the heading "The Financing of Pharmaceutical Education" The Survey recommends that

> **"The individual establishments comprising the business of Pharmacy recognize and assume their direct professional and financial responsibility for their effective maintenance of the profession of Pharmacy through the support of pharmaceutical education."**

With these words The Survey has asked for support for education, but it also has laid the responsibility for the formation and the development of the new profession of Pharmacy squarely in the hands of the Pharmacy Teachers. This will necessitate teaching the Pharmacy courses on as high a scientific level as possible, and also with as much professional emphasis as it is possible to give them. Considerable professional emphasis has been lost since the advent of the Baccalareate Degree in Pharmacy. Many of the courses in the curriculum are taught by teachers who are not pharmacists. This then requires greater professional emphasis on the part of teachers of Pharmacy courses if the profession is to continue, as The Survey indicates it must,

> **"A far greater proportion of members who are ever sharply jealous of the high reputation of the profession and who, by energetic cooperation, are determined ever to protect that reputation."**

Furthermore this professional emphasis should be made without detracting in any way from the basic material in the curriculum.

The inclusion of a professional degree in the educational picture may help to add professional emphasis, but it will not, in itself, solve the problem. The solution of the problem will require that we, the teachers of Pharmacy, do a lot of work. It will require that we first get as accurate a picture as we can of Pharmacy as it will be twenty to thirty years from now when our present students will be at their peak in the practice of their profession. Then we should select, develop, and organize the subject matter of our courses for the specific purpose of attaining the objectives necessary to equip the student to fit into that Pharmacy of the future. Our courses should be organized in sound sequence, and should be spread over sufficient time to permit complete mastery by the student. Sufficient flexibility should aslo be permitted through elective subjects for the adaptation of the individual interests of the students to the profession. All this is indeed no simple task.

Historical Background

The Survey has given us considerable help in starting on the present here participated in an open discussion at the Pharmacy of the future. The eleven objectives for the education and professional preparation of pharmacists listed on page 46 of the "Findings and Recommendations of The Pharmaceutical Survey" are the cornerstone of that forecast.

If you have not recently re-read these objectives I earnestly urge that you do so.

In the meantime, however, many of the Pharmacy teachers present here participated in an open dsicussion at the Pharmacy Seminar sponsored by the A.A.C.P. and held last June and July at the University of Wisconsin. This session took the form of a combined meetings of the Seminar and the Curriculum Committee, and Dr. George Webster acted as moderator for the discussion. The technique used was that contributions and suggestions from the group concerning the subjects under discussion were listed on the blackboard by the moderator. Two subjects so discussed at this joint meeting are of interest here: (1) What does the pharmacist do? What functions does he perform? and (2) What couses of study are necessary to prepare a pharmacist to fulfill these fuctions?

Reflecting the objectives for pharmaceutical education as outlined by The Survey, the discussion at the Pharmacy Seminar described the pharmacist of the future as having the following professional characteristics:

He must be a capable dispenser and an expert on medication forms, with an adequate background of therapeutic information, scientific fundamentals, and required technical skill, with the addition of such economic information as the availability and costs of various combinations and forms of medication. He should have a sense of civic responsibility, a capacity for professional growth, and a creative attitude. He should be competent economically.

When he dispenses a prescription it should be done with a therapeutic and pharmaceutical understanding, so that the prescription would be properly interpreted and the medication properly compounded. Therapeutically he should have a knowledge of dosage, and the action of the drugs used on the cell, on the tissue, and on the organism. Pharmaceutically he should have a knowledge of the methods of preparation, the physical and chemical properties of the drugs, the physical and chemical principles involved, and the methods of adequate and safe preservation. He should have a professional regard for pharmaceutical elegance in the finished product, and his prescriptions should be dispensed with due regard for the economic and legal aspects involved.

He should consult with and advise the physician, as well as the patient, and he should be a dependable source of reliable health information to the public.

Such a pharmacist should be able to compound a prescription which consists merely of the name and address of the patient, the name, dose and number of doses of the medication which the physician desires the patient to have. Other factors, such as the choice of vehicle and the selection of dosage form could be left to the pharmacist.

The discussion on the courses which would be necessary to supply the essential knowledge and training for a pharmacist to fit into the picture indicated above, resulted in the listing of the following courses of professional study:

Orientation
History of Pharmacy
Pharmaceutical Calculations
General Pharmacy I
Jurisprudence
Professional and Ethical Relations
Organic Pharmaceutical Chemistry
Inorganic Pharmaceutical Chemistry
Physical Pharmacy
General Pharmacy II
Public Health
Dispensing Pharmacy

It should be pointed out here that just prior to compiling this classification the members of the group had discussed not only (1) the objectives for pharmaceutical education recommended by The Survey, but also (2) the material designated as "Common Understandings" of The Survey Committee, (3) the fact that we used to train pharmacists in two years, and (4) the education needed by the pharmacist in preparation for his consultative function with the physician and also with the patient.

The major project of the Seminar was, of course, the detailed consideration of the individual courses listed as Pharmacy subjects. It should also perhaps be pointed out here that the progression from the picture of the functions the pharmacist must fulfill, to the courses necessary to equip him to fulfill those functions, to a detailed consideration of those individual courses is indeed a logical progression. While the length of time the course will require is a practical consideration, it should be secondary to the needs of the profession.

In the detailed consideration of the individual courses at the Wisconsin Seminar, the courses entitled General Pharmacy and Physical Pharmacy probably received the greatest amount of discussion. It has been said by some that they were the most "controversial" of the courses discussed. Whether or not the word controversial is correct, it is apparently hoped that some degree of clarification will result from the discussion here today. If such

should be the case one more small step will have been taken in line with The Survey recommendation that the A.A.C.P. continue its efforts for the constructive betterment of the four-year course.

The Courses in General Pharmacy

The courses now generally referred to as General Pharmacy I and General Pharmacy II first came to my attention as part of a preliminary draft of a report of the Consultative Committee of Teachers of Pharmacy to The Pharmaceutical Survey. As you know, from this report, General Pharmacy I was to include the material usually incorporated in such courses as Elementary Principles and Processes of Pharmacy and also a somewhat elementary part of the material which is usually called Pharmaceutical Preparations, Galenical Pharmacy or Operative Pharmacy.

The principal idea of this course is to familiarize the student with the classifications of pharmaceutical preparations. Under this arrangement the material is considerably restricted so that a much more rapid coverage of the classifications can be made. Sufficient detail will be employed to establish the classes of preparations as separate entities, and to identify them and differentiate them from each other. The laboratory work would include the production of examples of the various classes of preparations. However, no attempt is made to cover *every* preparation in *all* of the classes, and the different classes, aqueous, alcoholic, oleaginous, etc., are all covered in one semester. The course should come early in the Pharmacy sequence.

The course labeled General Pharmacy II is a considerably more advanced course than General Pharmacy I and should come much later in the sequence. Preferably it should be the course which immediately precedes the capstone course in Dispensing Pharmacy, which should be the highpoint in the curriculum. Briefly, General Pharmacy II includes the more advanced material on Pharmaceutical Preparations and also some material usually taught by most schools in the course in Dispensing Pharmacy. The work includes an evaluation of pharmaceutic agents and processes considered from the standpoint of efficiency of use in relation to differences in combinations of medicinals, conditions and length of storage, and types of dosage forms, and in connection with non-

official as well as official preparations. This relieves the Dispensing Course from some detail, thus permitting the incorporation of more advanced material and the development of a higher degree of professional skill in that course, which will bring it closed to the ultimate goal, that the course in Dispensing Pharmacy should be the capstone course of the pharmaceutical curriculum.

The two courses in General Pharmacy each require a completely different approach. This is illustrated by the preliminary draft of The Survey Committee Report as follows:

> **". . . in the first course the student would prepare bentonite magma in order to introduce him to the pharmaceutical classification and methods; in the second course, such products as acacia, tragacanth, methyl cellulose, ethyl cellulose, and sodium alginate, are considered together with bentonite with respect to their use as suspending and dispersing agents; and their relative efficiency in suspending insoluble materials is evaluated.**
>
> **"As a further example, in the first course preparations such as waters, syrups, elixirs, and spirits, are considered as classes and studied individually to illustrate general methods of preparation and to acquire familiarity with important individual members of the class. In the second course, inasmuch as the primary purpose of making these preparations is to develop them as flavoring or masking agents, the preparations are considered together with emphasis on their properties as flavoring or masking agents. In addition, those ingredients which confer this attribute to such preparations are studied. In other words, in the second course all substances and preparations are grouped and studied according to their pharmaceutical usage, or the purpose for which they are intended, rather than according to their relationship in the classes of pharmaceutical preparations."**

While the preliminary draft of The Survey Committee Report as a whole seemed to leave much that could be desired in the way of a Pharmacy program as a major subject in a School of Pharmacy, the division of the material into the two parts designated as General Pharmacy I and II was a distinct contribution which immediately opened up a number of possibilities. Briefly stated, the advantages of this division of the subject matter into two courses should be:

1. **The elimination of the objection that much of even the elementary material on a number of important classes of pharmaceutical preparations is not taught until too late in the curriculum under the arrangement where every preparation in each**

class was thoroughly considered before progressing to the next class of preparations.

2. **An arrangement of courses which would lend itself more readily to expansion of content, the introduction of new material, and the raising to higher levels of the material in General Pharmacy II as new concepts are introduced into the preceding basic courses.**
3. **A better, more fundamentally sound, sequence of subject matter, which should result in a saving of time, the elimination of duplication of effort, and the presentation of the Pharmacy material on a higher level.**

Advantage one, above, is obvious. In number two, the material referred to as being introduced into preceding basic courses might well include the course in Physical Pharmacy, just discussed in the previous paper by Dr. Busse. In reference to advantage number three, however, an illustration may be cited at this point.

Sequence of Course Material

In a number of schools chemistry is taught in the sequence: General Inorganic first, Qualitative and Quantitative Analysis second, and Organic Chemistry third. This is an excellent sequence for chemistry. In the Pharmacy sequence, however, the customary approach to the course on Pharmaceutical Preparations is to start, frequently in the first semester of the sophomore year, with the Aqueous group of preparations, taking up first the Waters, and second the Liquores or Solutions. A number of the important official solutions contain complex organic chemicals. This means that in the eleven schools of pharmacy in the United States which use the above chemistry sequence and teach organic chemistry in the junior year, the students are studying the pharmaceutical aspects of substances for which they will not get the complete chemical picture until a year and a half later. For this reason most Pharmacy schools teach Organic Chemistry in the sophomore year. This is much better from the point of view of Pharmacy and the chemistry sequence suffers very little, if at all. However, while the student now has only to wait until the next semester to get the chemistry material, the order of presentation is still the reverse of what it should be. With what degree of thoroughness, for example, can the Pharmacy teacher discuss Benzalkonium Chloride Solution early in the first semester of the sophomore year if the students

will *not* have studied quarternary ammonium compounds until about the middle of the *second* semester? The Pharmacy teacher faced with this problem has four alternatives:

1. **He can give the material cursory treatment to serve as a mere introduction to be amplified later.**
2. **He can give the material whatever treatment is possible in the absence of adequate chemical understanding.**
3. **He can give the material complete coverage regardless of the students' lack of adequate background.**
4. **He can take the time to develop the chemical principles involved and then thoroughly discuss the preparation in question.**

The first choice definitely puts the Pharmacy course on a very low, even on a bare descriptive, level.

In the second case the Pharmacy teacher must assume, or shall we say hope, that either the student or the chemistry teacher will refer back to the Pharmacy material and develop the necessary association of ideas at the time quarternary ammonium compounds are studied in the organic chemistry course, or that the mental connections will be established in the pharmaceutical chemistry course. In the meantime, the Pharmacy course has been taught on a lower level than necessary. The mental associations may never be made, and, if they are, credit for doing so will go to chemistry and the Pharmacy course will continue to be thought of as a low level course.

The third alternative is completely confusing to the student and almost suicidal to effective teaching.

In the case of the fourth alternative the Pharmacy teacher faces additional disadvantages. If he attempts to develop the chemistry involved he will probably, of necessity, have to do so on an abridged basis. That is to say, it would not seem possible for the Pharmacy teacher to develop the chemistry of quarternary ammonium compounds in a short time, or with as much success as the chemistry teacher would achieve using the full quota of time and with the addition of the intervening material which should precede such a development. Furthermore, if the Pharmacy teacher takes time to develop the chemical principles fundamental to each preparation, he then loses a corresponding amount of time from the teaching of the Pharmacy course. The Pharmacy course suffers here because of the spending of Pharmacy time to develop chem-

istry material. Furthermore, the chemistry teacher will repeat the chemical material again later on, and, since it will then be given in better chemical sequence, will again cause the Pharmacy course to show to disadvantage. In addition, this repetition constitutes a duplication of effort and is wasteful of time.

It may be concluded here then, that whenever Pharmacy material precedes in the curriculum the basic principles needed as a foundation, the choice of any of the four alternatives listed above as being applicable tends generally to reduce the Pharmacy course to a more elementary level, tends to be more confusing than helpful to the student, and may also result in duplication of effort and waste of time.

The proper course sequence of basic principles first and superstructure of pharmaceutical applications second is important. If the proper groundwork has been well laid in the basic subjects the Pharmacy teacher can, in a much shorter time, refresh the student's memory in the principles from the basic courses which are involved, and the terms which he uses in doing so are much more meaningful and richer in connotations. The proper sequence saves time, eliminates duplication of effort, makes possible a much higher level for the Pharmacy course, and results in a much greater appreciation of the material, and of Pharmacy, by the Pharmacy student.

Electives

In addition to being criticized by authorities on education for poor sequence of courses, the pharmaceutical curriculum has been found wanting in flexibility, in elective courses in general education. It is difficult to see how this criticism can be met adequately in a four-year program. It may be pointed out here, however, that this criticism will not be adequately met by the listing of some courses as electives, if the election of such courses by the student is necessary in order to understand thoroughly the courses which follow. Such courses are really required courses and should be listed as such.

The Elimination of Dead Wood

The pharmaceutical curriculum has also been roundly criticized on the basis of the need for eliminating a great deal of dead wood.

This criticism comes, not from authorities on education, but from practicing pharmacists. This criticism usually takes one of two forms:

1. **"If all the dead wood and obsolete material were eliminated from the Pharmacy course, the course could be cut to one year which is ample time in which to learn all a pharmacists needs to know today." (This form generally originates with a pharmacist who also on occasion voices the question: "Why is it that Pharmacy is not more highly regarded as a profession?")**
2. **The second form is usually stated: "If the obsolete material were eliminated from the curriculum, there would be adequate time to teach more modern material, such as antibiotics, the improved biologicals, the sulfa drugs, the antihistamics, silica, and alumina gels, chemical and biological insecticides, endocrine products, and vitamins."**

This second form is much more reasonable than the first, and comes much more fittingly from a practicing member of the profession. However, the pharmacists who voice it, when asked what the course should include relative to the more modern material cited above, seem uniformly to desire only a surface or at most a very shallow treatment of the material. They are very definite that a great deal could be eliminated from the curriculum but very vague as to what should be added.

It is, of course, unnecessary to point out here that it is hardly possible to improve a curriculum by continuously deleting material. New material must be incorporated. However, all of the items just mentioned above are the results of the improvements in and of the development of new concepts in the basic sciences as well as in Pharmacy. Since the advent of the four-year course the amount of new material, which has been of necessity, incorporated into the curriculum is indeed staggering. To give but a few examples of basic concepts which have appeared since Pharmacy went to the four-year program the following may be cited:

1. **The concept of pH and the development of buffering systems.**
2. **Broad advances in organic synthesis resulting not only in new therapeutic agents but also in new agents used in pharmaceu tical processes.**
3. **Applications of ion exchange.**
4. **Improvements in methods of assay—colorimetric, polarigraphic, microbiological, etc.**
5. **More accurate identification of the causative agents of diseases resulting in more specificity in therapeutics.**

6. **Advances in the isolation and identification of active principles from crude drugs and information concerning their chemical and physical characteristics.**
7. **Clarification of endocrinic and enzymatic mechanisms resulting in new products.**
8. **Advances in the knowledge of nutritional balances with a better understanding of the nitrogen balance and of natural and artificial deficiencies, etc., which has resulted in the isolation of vitamins and other food factors.**
9. **Further recognition of allergies and the resulting development of antihistaminic agents.**
10. **The development of isotopic tracer techniques with their bearings on metabolic functions and detoxification, etc.**
11. **The development of lyophilization or quick-freeze drying first utilized in making dried blood plasma and now used in the preparation of antibiotics and various other biochemical and pharmaceutical materials.**
12. **The use of the molecular still in ultra-high vacuum distillation now used in the separation of fatty acids, sterols and other chemicals with closely similar physical and chemical properties.**
13. **The development of the Metabolite Antagonism Theory to explain the action of the sulfonamides and which has now been applied in developing other chemotherapeutic agents.**
14. **Advances in physical chemistry, particularly in the fields of colloid chemistry, surface activity, and adsorption.**
15. **The modern concepts of valence. Recent developments in chemical physics, particularly wave mechanics, statistical mechanics, and paramagnetism, have evolved entirely new concepts of valence and molecular structure.**
16. **Atomic fission with its great potential applications in the use of radio-active isotopes.**

Any of these examples could be expanded considerably. If we should wish to enlarge upon, say No. 15 above, it might be said that one of the most significant advances in chemistry and physics in the last quarter century has been the wide-spread application of wave mechanics to the problems of atomic structure, molecular structure, and valence. Many chemical concepts taught in fundamental chemistry courses must be qualified, amplified, revised or discarded in the light of wave mechanics. For example, Bohrs planetary atomic model, in which the electrons are considered to be small particules of matter, whose position and momentum can be defined, has been replaced by Schrodinger's electron-cloud density picture. The concept of resonance, an off-spring of wave me-

chanics, has been applied widely. No longer are valence bonds considered to be purely ionic or purely covalent, but are resonance hybrids of two or more contributing structures. Similarly carbon-carbon bonds can no longer be classified as being purely saturated, olefinic, or acetylenic, but rather, a bond is said to possess X % single-bond characteristics and (100 — X) % double-bond characteristics or Y % double bond, and (100 — Y) % triple bond.

With the development of every new type of medication there is a large amount of basic theoretical material necessary for a sound understanding of these new products. Much of this fundamental material belongs in the basic courses. The amount of material resulting from developments in the basic sciences of biology, chemistry and physics upon which pharmacy is based have been so prodigious since the advent of the four-year course in pharmacy that it is a wonder that they can be adequately taught and have any time at all left for consideration of the professional courses.

It may perhaps be argued that pharmacy as presently practiced is adequately done with a superficial knowledge of new products and without complete grounding in the sound basic subject material which lies beneath them. The practicing pharmacist is apt to be satisfied if his sales personnel has but a superficial knowledge of these new products which are sold to the public. He also, all too frequently, fails to distinguish an employee who is a pharmacy student from the regular sales personnel. Since the student is doing sales work it seems to follow that he needs no more basic information on these products than the salesperson. This is indeed a serious fallacy ,and may stem, in part, from the fact that the employer, who may have graduated twenty-five, thirty, or more years, ago, has not kept up with the advances throughout the years, and may have only a superficial understanding of the new products himself.

It is our responsibility as educators, as Pharmacy teachers, to equip the graduates of each class with a sound foundation of principles as well as to train them in their application in order that they may be able to keep pace with developments after their graduation and during the twenty, thirty, or forty years during which they will be practicing pharmacy.

What this amounts to is a recognition of the fact that pharmacy students must not only be trained to practice pharmacy immediately upon graduation but they must be sufficiently well grounded to be able to keep pace with the rapid developments which will take place during their tenure in the profession. No one can foresee at the present time where these developments may lead. The only possible preparation which can be at all adequate would be a thorough grounding in basic principles. Anything less than this will remove the pharmacist of the future from the ranks of professional men, relegate him to the unhappy position of becoming a commercial adjunct on the marginal fringe of intelligent understanding, and render him subject to the whims, caprices, and manipulations of non-professional commercial domination.

Summary

In summarizing the ramifications of this paper it may be stated:

1. **That The Survey has shown the need for a definite increase in the emphasis on the professional aspects of Pharmacy and that the prime responsibility for initiating and activating this emphasis lies with the Schools and Colleges of Pharmacy and, more specifically, with the Pharmacy teachers.**
2. **This requires that the Pharmacy courses be taught on as high a scientific level and with as much professional emphasis as is possible.**
3. **Current pharmaceutical curricula have been criticized by educational authorities on several important educational principles:**
4. **The re-arrangement of the subject matter of Pharmacy into a sequence proposed by the Pharmacy Consultative Committee and amplified at the Wisconsin Seminar offers a device best calculated; (a) to erase the criticism of the educational experts; (b) make possible a better sequential relationship between the basic and the professional material; (c) raise the level of the Pharmacy courses; (d) facilitate the introduction of new basic concepts into the curriculum; (e) minimize duplication of effort and waste of time.**
5. **In no event should the introduction of new material into the curriculum or any increase in professional emphasis be permitted to lower the importance of a thorough grounding in basic principles which constitutes the foundation for the intelligent understanding of future advances in the field during the years the student will be practicing his profession.**

A Laboratory Outline and Some New Experiments for General Chemistry*

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Objectives in the General Chemistry Laboratory

In laboratory teaching of general chemistry five objectives are of prime importance: (1) laboratory technique, both general and the learning of specific laboratory operations and methods; (2) first hand use of chemical terminology; (3) drill in applications of chemical calculations; (4) student demonstration of chemical theory and (5) development of an elementary feeling for the descriptive chemistry of the more important elements and some of their compounds. All are essential as a background and foundation for future work in chemistry.

While these objectives are present at all times in laboratory teaching, specific and relative emphasis on any one of them changes with progress in the course. Initially gaining familiarity with terms, calculations, and operational techniques is of prime importance and too much descriptive chemistry is of little value, but as work progresses greater and greater emphasis must be placed on theory and descriptive chemistry. Care must be exercised, for if the attainment of too many objectives is attempted simuleaneously, most freshmen become hopelessly confused.

In attempting to lead the student as easily as possible through the mass of laboratory operations and chemical facts the school year may be divided roughly into four periods as to objectives. The first half of the first semester may be be devoted primarily to development of techniques and the gaining of familiarity with the apparatus, the terms, and the elementary calculations. During the second half of the first and the first few weeks of the second semester a presentation of elementary theory may be made. The earlier objectives continue throughout this second period but are now deemphasized in favor of theoretical considerations. Descriptive work for its own sake is best not presented during this time, but enough

*Read before the Conference of Teachers of Chemistry at the 1950 Atlantic City meeting.

must be included to make possible adequate interpretation of theory. During the balance of the second semester emphasis may be placed on descriptive chemistry, roughly half of the time to the non-metals and the other half to the metals. In these last periods an undercurrent of application of previously developed theory is maintained.

This outline of objectives integrates easily with class work as given at Rutgers College of Pharmacy. It makes possible the use of a large portion of the first two months for indoctrination of the student with necessary laboratory background. Generally speaking, a course which emphasizes structure and its relation to chemical reactions and properties during the initial class room work, has few ebperiments available which correlate the laboratory with the class-room. This may be due during this initial period either to experimental difficulties or to the expense of equipment. (The demonstrations of the stoichiometric laws, usually performed early in the laboratory, are of little value if good balances are not available.) By devoting the first portion of laboratory work to that indicated, by the time an area of good classroom-laboratory correlation is reached, the student has had general laboratory practice together with drill in nomenclature, etc., and is better fitted to carry out and interpret experiments in line with the remaining class work.

Correlation of Objectives with Subject Matter

In order to achieve objectives as given the following outline was developed for our laboratory work. In many cases completely new experiments (or new to the freshman laboratory) were necessary. The work as here presented represents an integration of experiments as arrived at after several years of experimentation. Some details are likely to change in the future but the overall outline seems to work out well.

Presentation of the course in the order given (the students have a course work outline from the first day) has an additional value in that it lays before the student an overall picture of the work and what is to be accomplished in the laboratory. Too often students perform experiments from day to day isolated, in their mind or otherwise, from each other. They fail to see how the individual experiment fits into the instructional scheme as a whole.

The overall outline of the course and its correlation to objectives follows:

Laboratory Work	Objectives
Fundamental Operations (I)	Laboratory Operations, Techniques, and Terminology.
Physical State, Physical Properties, and Physical Change (II)	Techniques (emphasis on mensuration). Terminology. Application of Simple Calculations.
Pure Chemical Substances (III)	Terminology. Laboratory Operations and Techniques. Additional Calculation Applications.
Non-reacting Mixtures of Substances (IV)	
(1) Solutions and Colloids	Terminology. Calculations (concentration of solutions and pH). Some Descriptive Chemistry and Theory.
(2) Separation of Mixtures	Fundamental Laboratory Operations. Techniques. Terminology and some Theory.
Reacting Systems (V)	Theoretical Chemistry. Calculations, (K, K_{sp}, K_i). As much descriptive chemistry as necessary for understanding of theory.
Non-Metals and Their Compounds (VI)	Descriptive Chemistry. Application of Theory.
Metals and Their Compounds (VII)	

An Outline for Achievement of Laboratory Objectives

The work necessary for presentation of these topics and the achievement of the desired objectives breaks down in greater detail in the following manner:

I. **Fundamental Operations.** The work covered includes:
(1) The various sources of energy for laboratory work (display).
(2) Glass working.
(3) Assembly of equipment (the student prepares a wash bottle).
(4) Measurements.

II. **The Physical World.** This work comes under two heads:
(1) Measurement of physical properties (i.e., M.P., density).
(2) Physical states and physical change. (Those students showing promise are allowed to prepare liquid sulfur dioxide to demonstrate a change of physical state).

III. **Pure Substances and Their Properties.**
(1) To demonstrate their preparation, the student synthesizes an acid and a base by various methods. The properties of the prepared samples are studied.
(2) The student prepares a salt ($ZnCl_2$) by various methods and shows in each case that he has achieved the desired compound.
(3) The student secures several covalent substances and demonstrates how they differ from electrovalent compounds.
(4) Experimental determinations of formulae and molecular weights are performed by those students sufficiently advanced in their work.

IV. **Non-reacting Mixtures of Substances.**
(1) Solutions and colloids are studied. Solubility, concentration, and pH are presented to the student for investigation. Students sufficiently advanced demonstrate molecular properties and their use. The preparation and properties of colloids are studied.
(2) A thorough-going study is made of means of separating mixtures of substances under the heads: (a) differential solubility (a special mixture is used by the student to demonstrate extraction, fractional crystallization, etc.); (b) vapor phase separations; (c) adsorption techniques (This work is new for the freshman laboratory except for the usual simple adsorption of acetic acid on charcoal. Chromatographic adsorption on paper for separation of cations and an ion exchange experiment are performed; (d) miscellaneous separations.

V. **Chemically Reacting Mixtures.**
(1) The physical phenomena usually accompanying chemical reactions are studied as: (a) Thermal affects (heat of neutralization), and (b) electrical effects. The elaboration of demonstrations showing the role of the electron in chemical reactions has proven especially interesting and instructive to the student.

(2) The factors affecting reaction rates are next studied. Experiments have been carefully reworked to demonstrate the effect of concentration, temperature, state of division, and catalysts.

(3) Chemical reactions as equilibria are studied and the factors causing ionic reactions to go to completion are demonstrated.

(4) A series of experiments demonstrating the common reaction types are studied next. (Acid-base, redox, combination-decomposition, and precipitations).

(5) The relative reactivity of certain families of substances is next studied. (Periodic classification, hydrogen displacement, halogen replacement, acid replacement, and solubility effects (emphasis on solubility product).

At this point emphasis shifts to descriptive chemistry in divisions VI and VII. Because of limited time and the wide range of material available the choice of a satisfactory group of experiments is difficult. A proper balance and range of material type and reaction types must be maintained. For pedagogical reasons, this work has been divided into non-metals and metals. However, the experienced instructor is well aware of the difficulty of drawing clear lines of this type. The choice of these experiments was made on the basis of the following considerations:

1. Relative importance of the chosen experiment compared to those of all types which were omitted. This represents an effort to maintain an equitable balance of all possible experiments.
2. relative importance of one of a type of experiment compared to all others demonstrating similar points. The general facts presented by the experiment should be best demonstrated by the substance or reaction used.
3. Practical difficulties in performance of the experiment and time consumed in its performance.
4. Ease of interpretation of results. They must have a clean-cut character so that observations are easily made and are not ambiguous or meaningless in the hands of the relatively inexperienced student.

In general those experiments satisfying the above criteria may be classified under four heads:

1. Synthesis of given compounds. These should: (a) demonstrate definite chemical principles or laws, (b) demonstrate an important and specific general type of reaction.
2. Properties of substances or groups of substances. Here relative importance of the substances used is considered. It is to be assumed that because of the knowledge thus gained the student

will feel at ease in future work with those substances not studied at this time.

3. Reactions of substances. While technically this should be included in properties these are considered outstanding typical reactions of a given compound or group of similar compounds.
4. Tests for more important ions are included.

The simplified overall outline is now continued for the descriptive portion of the course and is followed by a discussion thereof.

VI. **Non-Metallic Elements**
- (1) Water, its purification and analysis.
- (2) The halogens—preparation and properties of sodium chloride (hydrogen chloride), bleaching powder, potassium chlorate or iodate, and ammonium chlorstannate.
- (3) Sulfur and some of its compounds.
  - (a) Preparation and properties of sodium sulfite and thiosulfate.
  - (b) The properties of sulfuric acid.
  - (c) Common comparative tests for sulfur containing anions.
- (4) Phosphoric acid and its salts.
  - (a) Stepwise neutralization.
  - (b) Preparation and tests of condensed phosphates. (A simplified method of preparation of meta- and pyro-phosphates is given.)
- (5) Boron compounds.
- (6) Hydrogen peroxide and related compounds.

VII. **Common Metals and Compounds.**
- (1) Metals of group IA and IIA.
  - (a) Preparation and properties of sodium carbonate, potassium nitrate, and barium chloride.
  - (b) Comparative properties of these elements and their compounds.
- (2) Metallurgy.
  - (a) Concentration (flotation).
  - (b) Roasting.
  - (c) Reduction (a laboratory scale lead preparation).
- (3) The B Metals of groups I and II.
  - (a) Preparation of copper sulfate.
  - (b) Complex ion formation.
  - (c) Amphoterism (zinc).
  - (d) Covalent character in ionic compounds.
- (4) Transition elements.
  - (a) A demonstration of oxidation states by means of hydrogen reduction for Ti, V, Cr, Mn, (Mo,W).
  - (b) Properties of iron; stability of its salts, their acid-base character and redox properties.

(c) Preparation of potassium dichromate.

(5) Aluminum.

(a) Protective coatings and passivation.

(b) Aluminum sulfate as flocculent, acid source and adsorption agent.

(c) Alums (Crystal growth).

(6) Stannic chloride, the preparation of a covalent compound.

An analysis of this array of experiments shows what is accomplished with this rather short list.

Typical preparations, both aqueous and non-aqueous are presented:

In aqueous solution:

Potassium nitrate illustrates the use of relative solubility in fractional crystallization.

Sodium chloride purification shows use of the physical property of solubility as affecting a common ion. Hydrogen chloride preparation for sodium chloride purification illustrates acid displacement.

Sodium sulfite preparation gives further work in the use of gaseous reactants, neutralization, and the handling and properties of acid and normal salts.

Copper sulfate synthesis illustrates an oxidation-reduction reaction. It also illustrates use of secondary reactions to overcome slow reaction rates.

By preparing ammonium chlorstannate formation of complex anions is illustrated.

In non-aqueous media:

Reactions in fused media are illustrated by preparation of potassium dichromate.

High temperature reactions are illustrated by the preparation of barium chloride, as is the reduction of a sulfate.

Stannic chloride illustrates the preparation of an inorganic covalent compound.

Illustrative of experiments demonstrating group properties or theoretical principles there are: demonstrations of variable valence of the transition elements by use of hydrogen reduction; protective coatings and passivation of aluminum; oxidation-reduction properties and valence of iron compounds; covalent character in compounds usually considered ionic; complex formation (copper and zinc); amphoterism; and metallurgy.

Specific compounds of importance studied in detail are represented by sulfuric acid and water.

Summary

In summary it may be said that an attempt has been made to regroup (and introduce new experiments when necessary) general chemistry laboratory work in a logical fashion, easily comprehended by the student. The course of study correlates with modern practice of emphasizing atomic and molecular structure and placing emphasis initially on theoretical chemistry. An attempt is further made to provide the student with a workshop in which he applies what he learned about chemistry, i. e., theory, nomenclature, calculations, procedure, distributing learning objectives in a fashion easily achieved. Finally, an attempt is made to have the student at the same time demonstrate outstanding properties of important elements and become familiar with their chemical and physical behavior.

Chemistry vs. Pharmacology*

WALTER H. HARTUNG

The University of North Carolina

For the intelligent medicinal scientist, which certainly includes the progressive pharmacist, there can be no question of pharmacology *or* chemistry. The two are not mutually exclusive or contradictory; rather they are necessarily supplementary. The man interested in following medicinal chemistry, or the field of drug behavior in living tissue, can hardly get along without either; he needs the language of both. Are we, then, in the present discussion, concerned with the question of not of "which" but "how much of each?"

For the chemist it is painful to find how unappreciative an otherwise competent biological scientist can be of even the grosser differences in the chemical nature and structure of substances that exhibit similar pharmacodynamic properties, let alone ignorant of

*Read before the Conference of Teachers of Chemistry at the 1950 Atlantic City meeting.

the variations in the finer chemical structures that are associated with pharmacological differences. No doubt the pharmacologist is equally distressed to find the chemist insensitive to significant nuances in biological terminology and definitions. Hence, our ideal scholar is both a chemist and a pharmacologist.

Yet, even though we may affect a commendable broadness of mind, we may as well admit that there are two approaches to the argument, the correct one and the other fellows. The chemist will argue that he needs more chemistry, and the pharmacologist will insist that he ought to know more about his specialty.

It follows, then, that for our students to be trained well in all the basic sciences which have to do with drugs, their manufacture or isolation, their medicinal virtues, their distribution to the public, we cannot say that less than the complete schooling "is enough".

If there arises, now, the question: Which should be given first, training in chemistry, or training in pharmacology? The answer is obviously "Both". The student who knows the meaning of such terms as sympathiocotropic, anticholinergic, potentiation and countless others, is at a distinct advantage when he takes up the chemistry of epinephrine, diisopropyl fluorophosphate and thousands more. Likewise the student who is conversant with ions, buffers, the chicken-wire structures of the steroids, electronic reactions, to name only a few, is at a great advantage when he studies the biochemical or pharmacological phenomena or carcinogenesis, ACTH, detoxification, anesthesia, etc. Thus it is quite obvious that the student must have training in one field before he takes up the other.

Seriously, though, is not our chief problem here concerned with the fact that in our four-year curriculum we cannot turn out a "complete" pharmacologist or a "complete" chemist, let alone a satisfactory hybrid; we shall not be able to do it even if the proposed six-year program is adopted. Therefore, doesn't it become a question of just how much to include of each and how much to omit? It will take someone with omniscience which I do not possess, to give the final answer to that question. I doubt that even the collective wisdom of all of us can provide an answer. Is it in order, therefore, to submit suggestions with the hope that

they may prove of some merit and at the same time not be controversial?

First, there must undoubtedly be some happy and favorable balance between the amounts of the respective subjects to offer the student of pharmacy, whether it be under the present four-year schedule or the proposed six-year program. Even if this ideal can be established, it still would need an ideal teacher to provide this course; or if given by two departments, an ideal combination. Since this desirable goal probably will not be reached for some time, let's not worry too much about it now. Rather let us feel that if the professor is conscientious and diligent, and the student is endowed with desirable intelligence and possesses adequate acquisitiveness and industry, whatever may be given too much in one field will compensate for what may be given too little in the other. I'm sure that the Russians have not yet vetoed the "law of compensation."

Second, if a chemist must give the pharmacological information to his classes, let him not go too far afield in it, lest he make "an unnecessary display of his ignorance," in what is not his specialty. And if the pharmacologist must discuss the chemistry of things he deals with, let him show equal discretion. This, it seems to me, is really a corollary to the law of compensation.

Third, since we realize only too well that our students are not going to be thoroughly trained or finished scholars and that for them graduation from our colleges is a reality a "commencement", a beginning in the serious side of life, let our teaching, whether in chemistry or in pharmacology, be guided appropriately. Let's be more concerned about the foundation for their education than about the superstructure at the time of their graduation. Let's give them something on which they may construct a substantial future. Let's aid them in becoming acquainted with the fundamental facts of the respective sciences, not worrying too much about unconnected details, interesting though they may be. Let's emphasize to them that, despite our tendency to departmentalize our lives are our education, that living and education are but facets of the same thing, that one fact is interwoven and interdependent with others.

Fourth, where the faculty includes both a chemist and a pharmacologist, why not consider it their cooperative responsibility to equip the student, if we may adopt the terminology of analytical geometry, with a chemical axis and a pharmacological axis; then the student will be able to use these coordinates in evaluating not only the drugs already known but also those that will be discovered in the future.

A Resumè of

A Proprosed Course for Teaching the Use of the Library at the Philadelphia College of Pharmacy and Science*

ELIZABETH W. JOHNSON

Librarian Philadelphia College of Pharmacy and Science

The Philadelphia College of Pharmacy and Science is the oldest teaching institution of its kind in America. It was founded in historic Carpenters' Hall in 1821 to provide systematic instruction in the sciences for apprentices in pharmacy. From that day to this, the thorough training of pharmacists for service in the several fields of pharmaceutical practice has been the major assignment and responsibility of the College, an achievement accomplished through repeated alterations, expansions and diversification of its educational program to meet the changing requirements of the times.

The library of the College has been keeping pace with the changes and improvements instituted in, the curriculum and graduation standards established by the College. The present holdings of the library represent one of the finest collections in

* This article is a resumè of a study submitted to the Drexel Institute of Technology, School of Library Science, Philadelphia, Pa., in partial fulfillment of the requirements for the degree of Master of Science in Library Science, June 1950. It was prented at the Atlantic City 1950 meeting as a part of the Report of the Committee on Libraries.

this country of books and periodicals on pharmacy and its related subjects.

The value of the library as an essential adjunct to the teaching facilities of the College has been increasing for the past several years. Personal experience in the library and observation of the students who need library materials indicates that the freshmen at this College, as in most colleges, are not prepared to do the most elementary kind of library research. Many of the faculty members have recognized this deficiency and have expressed the need for a program which would inspire the students to be more conscious of the library, its books and other materials. The following remarks by some of the members of the faculty are of interest:

> **"The library is to a student what a baseball bat is to a baseball player. A student should learn how to use the library effectively at the very beginning of his college career. The library is an invaluable tool and must be properly understood. Training in how to use the library carries with it many values useful to the student after graduation."**
>
> **"The words index, glossary and bibliography are meaningless to most freshmen students. We cannot expect the simplest library assignment to be done correctly as long as the students are so poorly equipped for this type of work."**
>
> **"A required course in training in the use of the library would be of the greatest value. It would be stimulating and most helpful to all, regardless of background. A pharmacist must know how and where to find facts quickly."**

With the changes recommended by The Pharmaceutical Survey in the overall education of the pharmacy student, and with the recognition by the faculty and administrators of the increasing value and need of the library as an implement of education, it is obvious that the students must have a knowledge of the fundamentals of using the library. It seems essential therefore, that some form of training in the use of the library be included in the curriculum of the pharmacy students at the Philadelphia College of Pharmacy and Science.

Much has been written in regard to the methods of teaching the use of the library at the elementary and high school levels and many colleges and universities have published handbooks with proposed or recommended courses. Although suggested courses for the medical colleges are available, no course was found on the

fundamental instruction for the use of the library in a pharmacy school.

Since the literature in the field revealed little material of any value to aid in formulating a course of instruction for the College, fourteen colleges of pharmacy were contacted directly to learn what methods were used in these colleges in teaching the students the use of the library.

The colleges selected for study are all accredited by the American Council on Pharmaceutical Education and are all located in the Eastern and North Atlantic States. Letters were written inquiring if a course in the use of the library was given to the undergraduate pharmacy students by the librarian or any member of the library staff.

Replies from eleven librarians indicate that only two give any instruction in the use of library materials. In one case a one-hour lecture of a general nature is given to all freshmen in the University, and in the other, the senior pharmacy students have a one-hour lecture, with emphasis on the abstract and index services available in the library and useful in the preparation of a special assignment.

Personal visits were made in December, 1949, to five colleges and the librarians at these institutions were interviewed.

The number of colleges contacted and visited was not adequate for a thorough study of the situation in the pharmacy schools. However, it did show that of the fourteen colleges contacted, no course of any value was part of the required curriculum.

For the most part, the libraries visited were well equipped and administered by capable librarians. Although there is no diagnostic proof of how inadequately prepared the students are for individual library searching in these schools, most of the librarians indicated that the majority of students were unaware and uninterested in the vast resources of the library.

Educators recognize the value and need for training in the use of books and libraries, but a decision as to where that training rightly belongs is sometimes difficult to obtain.

The very fact that books and libraries are basically needed seems to indicate that the skill should have been acquired before the student reaches the college level. Ideally, learning the use of

the library should be a continuous progress. The elementary school student should become familiar with the simple reference books and the high school student with other books and a simple catalog. So few schools actually follow any such courses that many colleges find themselves faced with the problem of what to do with the students who have had no training in the use of books and libraries. College students need training in the complex catalog and in the methods and techniques of bibliographic research, which is as important to the sciences as the laboratory courses.

The question of whether or not this training is rightly the function of the colleges is disputed by many librarians and educators who claim that the subject is one that should be adequately handled in the high schools. Teaching of the use of the library varies so much at the high school level, that what is being done in the colleges assumes great importance.

Many changes have taken place during the past decade in methods of education aimed at developing a greater degree of student independence and initiative. In this post-war era the educated person will be appraised according to his ability to think, to discover and to acquire information about men and affairs[1]. The library as an instrument of education will serve not as an end in itself, but as a means to many ends[2].

The importance of the library to a teaching institution is being recognized more and more. Branscomb[3] points out that the function of the college library is to forward the educational program of the campus, and should be so organized and administered as to be as indispensable a feature of the college as the laboratory is to the science department. As part of an institution devoted to education, the library has the opportunity of developing in the student the efficiency of method and use of printed materials which will complement the formal teaching of the lecture room.

Many research workers and faculty members, while thoroughly trained in their own subject field, are oftentimes totally unaware of the source materials on related subjects. So many college students never have the opportunity to learn to use the library—that employers of science graduates are particularly concerned over the deplorable weakness in many of their employees who do not know the principles of library research.

The value, power and need for a library in education and especially in science has shown that students do need some kind of training in the use of the library materials at the college level.

The desirability of instruction in library use has been stressed by the American Medical Association in its survey of medical education and from the unpublished data it seems evident that in a short time most medical schools will insist on instruction in the use of the library[4]. The recent appointment of two leading medical librarians to the teaching staff by two outstanding American universities indicates the recognition of the importance of instruction in bibliography and reference source materials in the medical school curriculum.

In the opinion of the librarian, the training offered to freshman for the past four years has not been entirely satisfactory. It has served to inspire a few energetic and conscientious students to seek further information, but for the majority of students the instruction has had little value.

For the first two years a one-hour lecture was given in the library to the first year English classes. This was general orientation on the library, with an explanation of the methods of borrowing books and an examination of the collection. The next year two hours were allotted to library instruction. The additional hour was devoted to a brief discussion of the pharmacy periodical literature and the use of the abstract and index services available in the library. This past year, (1949), the instruction was increased to three one-hour lectures. The additional hour provided a general review of the first two lectures and an assignment which consisted of locating information on a specific new development in the pharmaceutical field using reference tools. The lectures were scheduled for students regularly assigned to freshmen English classes and were given in addition to the regular class periods.

The three hours of library instruction followed by an assignment of locating a specific item has proved more valuable to many of the students than the shorter sessions. It served to acquaint the students with the library, and to allow them to handle at least some of the more important library materials.

The librarian of the College is of the opinion that the most effective way to insure adequate instruction in the use of the library

would undoubtedly be to institute a regularly organized required credit course. Anything less than a recognized course in the curriculum tends to minimize its value in the eyes of the student. Randall and Goodrich[5], discussing instruction in the use of the library, state that a definite curriculum in library use and bibliography taught by skillful instructors, and raised to a position of some prominence in the program of the college is the only proper answer for this demonstrated need for fundamental knowledge. If it be the aim of the college to fit the student for living it would seem to be one of its major responsibilities to make certain that he acquires skill in the use of a major tool of living—the library.

The proposed course is an outgrowth of the three-hour instruction offered to the students at present. The course would include the following: a study of the important general reference source materials and guides to locating specific information about books and and guides to locating specific information about books and periodicals; a brief introduction to bibliographical methods; hints for note taking and suggestions for improvement of study habits. Assignments would be integrated with one or more of the freshmen course topics to show the value and usefulness of the library in the related pharmacy courses.

In order to justify to the student his need for such instruction and to eliminate those students who have had an effective and adequate course, a diagnostic test would be given during Freshmen Orientation Week. Several such tests[6 7 8] are available and one which would be most suitable for students training in science would be selected.

The course proposed is a one-half semester-hour credit course required of all freshmen students who do not successfully pass the diagnostic test. The class should be limited to twenty-five students meeting regularly for six one-hour periods.

Guests lecturers may be called upon to introduce special subject books; however, the librarian would have complete responsibility for the program.

The student would be required to choose one topic from many suggested by members of the faculty. Throughout the course he would be directed in locating information on his particular topic.

He would examine the card catalog, some of the various books of general reference value, and the periodical index and abstract services. He would be required to prepare a short bibliography on his topic and pass an examination at the end of the instruction period.

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Note: The complete bibliography is contained in the original study

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The new officers of the American Pharmaceutical Association, as announced by the Board of Canvassers on September 29, are: President Elect, Don E. Francke, Ann Arbor, Michigan; First Vice-President-Elect, Joseph B. Burt, Lincoln, Nebraska; Second Vice-President-Elect, John A. MacCartney, Detroit, Michigan. Members-Elect of the Council for a term of three years are, Martin E. Adams, Boston, Massachusetts; Glenn L. Jenkins, Lafayette, Indiana; and W. Arthur Purdum, Baltimore, Maryland. These officers will be installed at the annual convention which will be held in Buffalo, New York, the week beginning August 26, 1951.

Reports of Officers, Committees and Delegates of the American Association of Colleges of Pharmacy at the 1950 Meeting at Atlantic City

(Continued from Page 490 of the July, 1950 Number)

Report of the Committee on Libraries

At the 1949 meeting of the Association, the Committee on Libraries presented a selected list of books which it regarded as appropriate for a pharmacy school library. The list was recently published in the American Journal of Pharmaceutical Education. This year's report is comprised of a selected list of journals of pharmacy, chemistry, biology, history, pharmacology, and closely related fields of study. Both of these compilations are in no sense complete or final and should be regarded as suggestive only.

In formulating this report an effort has been made, in so far as possible, to give the correct names of the journals, the publisher, address, and subscription price. Since much of this information has been gathered from a variety of reference sources of different ages, and since the references were not always in agreement on the points of information under consideration we are unable to guarantee strict accuracy in all instances. Not only should we admit the possibility of errors but there are omissions too which some may question but, as stated, there is no attempt to prepare a complete list of journals at this time.

It is still difficult to secure satisfactory information concerning foreign publications. A certain number have been included here but we feel rather uncertain about the data about them. Your chairman has had the hope for years that we would, at some time, get a clear picture of the pharmaceutical journals of the Latin American countries. A few such journals have been included but we are not too sure of their place here.

In order to keep this list from becoming too big, journals of the state associations and the so-called house organs of manufacturers have not been included. It is to be expected that the libraries of the schools of pharmacy would always have its own state journal at hand and most of the house organs are to be had for the asking.

The chairman thanks the members of the committee who have kindly cooperated in compiling this report.

C. O. LEE, *Chairman*.

A SELECTED LIST OF MODERN SCIENTIFIC JOURNALS

BIOLOGY

TITLE	Publisher and Address	PRICE
Acta Pharmacologica et Toxicologica	University of Copenhagen Copenhagen	Kr35
American Journal of Botany	Botanical Society of America Burlington, Vt.	$ 8.00
American Journal of Physiology	American Physiological Society 19 W. Chase St. Baltimore	$ 7.50
Bacteriological Reviews	American Bacteriologists Society Baltimore	$ 4.00
Biochemical Journal	Biochemical Society (London) London	3 10 S
Biological Abstracts (9 sections)	Biological Abstracts, Pub. 3613 Locust St., Philadelphia	$30.00
Journal of Bacteriology	American Bacteriologists Society Mt. Royal and Guilford Aves. Baltimore	$10.00
Jounral of General Physiology	Rockefeller Institute of Medical Research New York	$ 5.00
Journal of Pharmacology and Experimental Therapeutics	Soc. Exp. Pharmacol. Therap. Mt. Royal and Guilford Aves. Baltimore	$15.00
Pharmacological Reviews (Sup. J. Pharmacy Exp. Therap.)	Soc. Exp. Pharmacol. Therap. Mt. Royal and Guilford Aves. Baltimore	$ 2.00
Public Health Reports	U.S. Public Health Service Washington, D. C.	$ 4.00

CHEMISTRY

TITLE	Publisher and Address	PRICE
American Dyestuff Reporter	Howes Publ. Co. 1 Madison Ave., N. Y.	$ 5.00
American Journal of Science	American Journal of Science New Haven, Conn.	$ 6.00
American Perfumer and Essential Oil Review	Robbins Publ. Co. Inc. 9 E. 38th St., N. Y. 16 New York	$ 3.00
American Scientist (The Sigma Xi Quarterly)	Yale University New Haven, Conn.	$ 1.00
Angevandte Chemie	Verlag Chemie G.m.b.H., Heidelberg or Berlin, Ger.	M18/.v
Annalen der Chemie, Justus Liebigs	Verlag Chemie G.m.b.H., Kurfurstenstr 51 Berlin W. 35, Ger.	M15/v
Annales de Chimie	Masson et Cie., Libraries de l' Académie de medecine 120 Blvd. St. Germain, Paris	465f
Annual Report on Essential Oils Synthetic Perfumes, Schimmel & Co.	Schimmel & Co., Inc. 601 W. 26th St., N. Y. 11, New York	gratis
Annual Reports on the Progress of Chemistry (Chemical Society of London)	The Chemical Society Burlington House W1, England	15s
Annual Review of Biochemistry	Annual Reviews, Inc. Stanford University, P.A., California	$ 5.00
Archives of Biochemistry	Academic Press, Inc., 125 E. 23rd St., N.Y. 10, N. Y.	$ 5.50
Chemische Berichte	Verlag Chemie, Kurfurstenstr 51, Berlin W. 35, Ger.	
Berichte der Schimmel & Co., Aktien	Schimmel & Co., Akt. Ges., Militiz bz. Leipzig, Ger.	
Biochemical Journal	Cambridge University Press Bentley House, 200 Euston R. London	L3 10s
Biochemsche Zeitschrift	Julius Springer, Linkstr., 22/24 Berlin W9, Ger.	
British Chemical Abstracts	Bureau of Abstracts, 9/10 Saville Row, London W1	
A. Chemistry and Index		A. L 9
B. Applied Chemistry		B. L6 55
C. Analysis and Apparatus		C. L 2

TITLE	Publisher and Address	PRICE
Bulletin of the Chemical Society of Japan	Imperial Univ. of Tokyo, Tokyo, Japan	
Bulletin of the National Research Council (U.S.)	National Research Council, 2101 Constitution Ave., Washington 25, D. C.	variable
Bulletin de la Société Chimique de France	Masson & Cie., 120 Blvd., St. Germain, Paris Fr.	$28.00
Canadian Journal of Research (Sec. B & E)	National Research Council Ottawa, Can.	$ 3.00
Chemical Age	Benn Bros. Ltd., Bouverie House, 154 Fleet St., London E. C 4, Eng.	26s
Chemical and Engineering News	American Chemical Society 1155-16th St., N. W., Washington 6, D. C.	$ 2.00
Chemical Abstracts	Chemical Abstracts, Ohio State University, Columbus, Ohio	$20.00
Chemical Reviews	Williams & Wilkins Co., Mt. Royal & Guilford Ave., Baltimore 2, Md.	$ 5.00
Chemische Berichte (formerly Ber. d. Deutghem Chem. Gesells)	Berlin	$24.00
Chemisches Centralblatt	Verlag Chemie, Attilastr., 16, Berlin-Tempelhof, Ger.	M52.60
Chemiker Zeitung	Otto van Holen, Cothen, Anhalt, Ger.	M.34
Comptes rendus hebdomadaires des sïances de l'acadmémie des sciences	Gauthier-Villars Imprimeur-Libraire Quai des Grands Augustins 55, Paris	fr. 2500
Fette und Seifen	Industrielverlavon Hernhaussen Kom.-Ges. Lietzenburger Str. Berlin W 15, Ger.	M33
Gazzetta Chimica Italiana	Via Quattro Movembre Rome, Italy	L1800
Helvetica Chimica Acta	Georg & Co., Basel, Switz.	f39
Journal of the American Chemical Society	American Chemical Society 1155-16th St. N. W., Washington 6, D. C.	$ 8.50
Journal of the Association of Official Agricultural Chemists	Box 540 Benjamin Franklin Station, Washington 4, D. C.	$ 6.25

TITLE	Publisher and Address	PRICE
Journal of Biochemistry (Japan)	Itchome Kagacho, Ushigome, Tokyo, Japan	$ 6.00
Journal of Biological Chemistry	American Society of Biological Sciences, Inc., Mt. Royal & Guilford Aves., Baltimore 2, Md.	$22.50
Journal of Chemical Education	Harvey F. Mack, 20th & Northampton Sts., Easton, Pa.	$ 3.00
Journal of the Chemical Society (London)	Burlington House, London W1, Eng.	L3 15s
Journal of the Chemical Society of Japan	Imperial Univ. of Tokyo, Tokyo, Japan	
Journal of Colloid Science	Academic Press Inc., 125 E. 23rd St., New York 10, N. Y.	$10.00
Journal of the Council for Scientific and Industrial Research	G. A. Cook, Sec'y, 314 Albert St., E. Melbourne, Victoria, Australia	gratis
Journal of the Indian Chemical Society	B. N. Ghosh, 92 Upper Circular Rd. Calcutta, India	Rs20
Journal of Organic Chemistry	Williams & Wilkins Co., Mt. Royal & Guilford Aves. Baltimore 2, Md.	$ 6.00
Journal of Physical and Colloid Chemistry	Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, Md.	$10.00
Kolloid-Zeitschrift	Theodore Steinkopf, Resindezstr. 32, Dresden-Blaseivitz, Ger.	M18
Mikrochemie vereinigt mit Mikrochemica Acta	Springer-Verlag, Molkerbastei 5, Vienna 1, Austria	M40
Modern Plastics	Modern Plastics, Inc., 122 E. 42nd St., New York, N. Y.	$ 5.00
Monatschefte fur Chemie	Springer-Verlag, Molkerbastei 5, Vienna 1, Austria	
National Research Council Bulletins	National Research Council, 2101 Constitution Ave., Washington 25, D. C.	irr

TITLE	Publisher and Address	PRICE
Nature	Macmillan & Co., Ltd., St. Martin's St., London WC2, Eng.	L4 10s
Official Gazette of the United States Patent Office	Supt. of Documents, Gov't Printing Office, Washington 25, D. C.	$16.00
Official Journal (British Patents)	The Patent Office, 25 Southampton Bldgs., Chancery Lane, London WC2, Eng.	L2 15s
Oil and Soap	American Oil Chemist's Society 35 E. Wacker Drive, Chicago 1, Ill.	$ 4.00
Oleagineux	11-12-13 Sq. Pétrarque, Paris (16e), France	fr. 1500
Proceedings of the American Philosophical Society	Lancaster Press Inc., Lancanster, Pa.	$ 5.00
Proceedings of the National Academy of Sciences of United States of America	National Academy of Sciences, Constitution Ave. & 21st St., Washington 25, D. C.	$ 5.00
Proceedings of the Royal Society (London) (Series B)	Cambridge University Press, Bentley House, 200 Euston, Rd., London N. W. 1, Eng.	32s
Recueil des travaux chimiques des Pays-Bas	Nederlandsche Chemische, Vereeniging, Bureau Lange Voorhout 5, The Hague	$10.00
Review of Scientific Instruments	American Institute of Physics, 57 E. 55th St., New York 22, N. Y.	$ 5.00
Scientific American	Munn & Co., 24 W. 40th St., New York 18, N. Y.	$ 4.00
Science	American Association for Advancement of Science, Smithsonian Inst. Bldg., Washington 25, D. C.	$ 7.50
Science News Letter	Science Service, Inc., 1719 N St., N. W., Washington, D. C.	$ 5.00
Science Progress	Edward Arnold & Co., 41 Maddox St., London W1, England	L1 11s 2d

TITLE	Publisher and Address	PRICE
Scientia (Milan)	Head Office of the Review ASSO, Como, Italy	$13.50
Scientific Monthly	Amer. Assoc. Advm. Science, Smithsonian Inst. Bldg., Washingtin 25, D. C.	$ 5.00
United States Department of Agriculture Bulletins, etc.	Supt. of Documents, Government Printing Office, Washington 25, D. C.	
Zeitschrift fur physiologische Chemie	Walter de Gruyter & Co. Woyrschstr. 13 Berlin W 35, Ger.	M13.50

INDUSTRIAL CHEMISTRY

TITLE	Publisher and Address	PRICE
Annual Reports of the Society of Chemical Industry on the Progress of Applied Chemistry	W. Heffer & Sons, Ltd., Cambridge, England	
Chemical Industries	Maclean-Hunter Publishing Corp., 522 Fifth Ave., New York 18, N. Y.	$ 4.00
Chemistry and Industry	Society of Chemical Industry, 56 Bictoria St., London S. W.1, Eng.	L.2 15s
Industrial Chemist and Chemical Manufacturer	33 Tathill St., Westminster, London SW1, Eng.	12s
Industrial and Engineering Chemistry	American Chemical Society, 1155 16th St. N. W., Washington 6, D. C.	$ 6.00
International Industry	Leonard Hill Ltd., 17 Stratford Place, London W1, Eng.	20s
Journal of the Society of Chemical Industry	56 Victoria St., London S. W. 1, Eng.	Ll 15s
Manufacturing Chemist	Leonard Hill Ltd., 17 Stratford Place London W1, Eng.	25s
Pharmazeutische Industrie	Rosenmeier & Saenger, Budapester Str. 7, Berlin W 62, Ger.	M15
Schweitzer Chemiker-Zeitung und Technik-Industrie	Rascher & Cie., A. G., Zurich, Switz.	f10.

TITLE	Publisher and Address	PRICE
Seifensieder Zeitung	Verlag fur chemische Industrie, Frolichstr. 14, Augsburg, Ger	M24

ANALYTICAL CHEMISTRY

TITLE	Publisher and Address	PRICE
Analytical Chemistry	American Chemical Society, 1155 16th St. N. W. Washington, D. C.	$ 4.00
The Analyst	W. Heffer & Sons Ltd., Hills Road, Cambridge, Eng.	35s
Chimie Analytique	Les Presses Documentaires, 28 Rue St., Dominique, Paris	fr. 550
Chemist-Analyst	J. T. Baker Chemical Co., Phillipsburg, N. J.	$ 1.00
Journal of the Association of Official Agricultural Chemists	Box 540 Benjamin Franklin Station, Washington 4, D. C.	$ 6.25
Journal of Research of the National Bureau of Standards	Supt. of Documents, Government Printing Office, Washington 25, D. C.	$ 3.50
Instruments	Instruments Publ. Co., 1117 Wolfendale St., Pittsburgh, Pa.	$ 2.00

HISTORY

TITLE	Publisher and Address	PRICE
Bulletin of the History of Medicine	Johns Hopkins Press, 1900 E. Monument St., Baltimore	$ 5.00
Chymia, Annual Studies in the History of Chemistry	University of Pennsylvania Press, 3436 Walnut Street, Philadelphia	
Isis, Review of the History and Philosophy of Science	Widener Library 185, Cambridge 38, Mass.	$ 5.00
Journal of the History of Medicine and Allied Sciences	20 E. 70th Street, New York 21, N. Y.	$ 7.50

PHARMACY

TITLE	Publisher and Address	PRICE
American Druggist	Hearst Magazines Pub., 572 Madison Ave., New York	$ 5.00
American Journal of Pharmaceutical Education	Am. Assoc. Colleges of Pharmacy, Lincoln, Neb.	$4 00
American Journal of Pharmacy	Philadelphia College of Pharmacy, Philadelphia, Pa.	$ 3.00
American Professional Pharmacist	Romaine Pierson Pub., 67 Wall St., New York	$ 5.00
Annales Pharmaceutiques Francaises (formerly J. Pharm. et Chim.)	Masson and Cie., 120 Blvd. St., Germain, Paris	fr. 300
Apothecary	L. C. Parsons Pub., 376 Bolyston St., Boston	$ 1.00
Archiv der Pharmacie	Verlag Chemie Kurfurstenstr., Berlin, W.35, Ger.	M19.50
Australasian J. Pharmacy	Australasian Pharm. Pub. Co., Melbourne, Aust.	21s
Bulletin American Society of Hospital Pharmacists	Am. Soc. Hospital Pharmacists 2215 Washington, D. C.	$ 5.00
Bulletin de Pharmacie du Sud-Est.	Faculte de Pharmacie, Montpellier, France	
Bulletin of the National Formulary Committee	Am. Pharm. Assoc., 2215 Constitution Ave., Washington, D. C.	$ 5.00
Canadian Pharmaceutical Journal	Pharmaceutical Pub. Co., Toronto 2, Canada	$ 2.50
Central Pharmaceutical Journal	Shine and Omalley, Pub., 221 N. LaSalle St., Chicago, Ill.	$ 2.00
Chemist and Druggist	28 Essex St., Strand, London, Eng.	25s
Drug and Cosmetic Industry	Drug Markets, Inc., 101 W. 31st, New York, N. Y.	$ 2.00
Drug Topics	Topics Publishing Co., 330 W. 42nd St., New York	$ 5.00

TITLE	Publisher and Address	PRICE
Drug Trade News	Topic Publishing Co., 330 W. 42nd St., New York	$ 3.00
Farmacéutico	Business Pub. Internat. Corp., 330 W. 42nd St., New York	$ 2.00
Farmalecta	Publicación de Inst. Massone para el Cuera Farmacéutica, Buenos Aires	
Food, Drug, Cosmetic Law J.	Editorial Advisory Committee, Chicago, Ill.	$10.00
Hospital Management	Hospital Management Pub. 100 E. Ohio St., Chicago	$ 2.00
Hospitals	American Hospital Association 18E Division St., Chicago	$ 3.00
Il Farmaco Scienza e Tecnica	Pavia, Italy	
Journal American Dental Association	American Dental Assoc., 222 E. Superior St., Chicago	$ 5.00
Journal American Medical Association	American Medical Assoc., 535 N. Dearborn St., Chicago	$ 8.00
Journal American Pharmaceutical Assoc. Scientific Edition	American Pharmaceutical Association, 2215 Constitution Ave., Washington, D. C.	$ 4.00
Journal American Pharmaceutical Assoc. Practical Pharmacy Edition	American Pharmaceutical Association, 2215 Constitution Ave., Washington, D. C.	$ 4.00
Modern Hospital	Modern Hospital Pub. Co., 919 N. Michigan Ave., Chicago	$ 3.00
N. A. R. D. Journal	National Association Retail Druggists Pub. 205 W. Wacker Dr., Chicago	$ 2.00
Northwestern Druggist	Bruce Publishing Co., 2642 University Ave., St. Paul, Minn.	$ 2.00
Oil, Paint and Drug Reporter	Schnell Pub. Co., 59 John St., New York 7, N. Y.	$ 5.00
Perfumery and Essential Oil Record	London England	21s (25)d.
Pharmaceutical Journal	Pharmaceutical Society of Great Britain, London, England	42s

TITLE	Publisher and Address	PRICE
Quarterly Journal of Pharmacy and Pharmacology	Council Pharmaceutical Society of Great Britain, 17 Bloomsbury, Sq., London WC1.	L1.105
Schweizerische Apotheker Zeitung	Schweizerwische Apotheker, Verein. Sihlstr. 37, Zurich, Switzerland	36d

MISCELLANEOUS

TITLE	Publisher and Address	PRICE
American Journal of Science	New Haven, Conn.	
American Naturalist	Science Press, Grand Central Terminal, New York City, N. Y.	
Anesthesia and Analgesia	Elmira, N. Y.	
Annals of Missouri Botanical Gardens	Missouri Botanical Gardens, St. Louis, Mo.	
Archiv Dermatology and Syphilology	Am. Medical Assoc., 535 N. Dearborn Street, Chicago, Ill.	
Archives of Pathology	Am. Medical Assoc., 535 N. Dearborn Street, Chicago, Ill.	
Biological Bulletin	Lancaster, Pa.	
Botanical Review	New York Botanical Garden, Bronx Road, N. Y.	
Journal Chronica Botanica	Waltham, Mass.	
Journal of Allergy	C. V. Mosby Company, St. Louis, Mo.	
Journal of Clinical Investigations	645 Madison Avenue, New York, N. Y.	
Journal of Experimental Medicine	Mt. Royal and Guilford Ave., Baltimore, Md.	
Journal of Immunology	Mt. Royal and Guilford Ave., Baltimore, Md.	
Journal of Laboratory and Clinical Medicine	C. V. Mosby Company, St. Louis, Mo.	
New England Journal of Medicine	Mass. Medical Society 8 Fenway, Boston, Mass.	
Physiological Review	19 W. Chase St., Baltimore, Md.	

TITLE	Publisher and Address	PRICE
Plant Physiology	American Society of Plant Physiologists, Lancaster, Pa.	
Plant Science Literature	U. S. Dept. of Agriculture, Washington, D. C.	
Proceedings Society Experimental Biology and Medicine	College of the City of New York, New York City, N. Y.	
Proceeding Staff Meetings Mayo Clinic	Mayo Clinic, Rochester, N. Y.	
Squibb Abstract Bulletin	17 Columbia Heights, Brooklyn, N. Y.	
Stain Technology	New York Agricultural Exp. Station Bulletin, Geneva, N. Y.	

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2. Classified List of Periodicals for the College Library (1948) F. W. Faxon Company, Boston.
3. Am. J. Pharm. Education, 7, 187-242 (1943).
4. Directory Newspapers and Periodicals 1948 N. W. Ayer and Son, Philadelphia.
5. Librarian's Guide (1948-1949) F. W. Faxon Co. 83 Francis St., Boston.

Report of the Committee on the Status of Pharmacists in Government Service

The membership of this committee was constituted at the beginning of the fiscal year, as follows:

Dr. Robert L. Swain J. Doyle Norris F. Royce Franzoni	representing the National Association of Boards of Pharmacy
Dr. Charles H. Rogers Dr. Ralph W. Clark Dr. Noel E. Foss	representing the American Association of Colleges of Pharmacy
Dr. John W. Dargavel Roger Lusby George H. Frates	representing the National Association of Retail Druggists
Dr. R. Blackwell Smith Norman N. Baker Arthur H. Einbeck	representing the American Pharmaceutical Association

The committee wishes to take note of the passing from the active work of the committee of Dean David B. R. Johnson of Oklahoma and Dr. Henry S. Johnson of Connecticut who have given many years of invaluable service to the work of this committee. Both have manifested a continuing interest in the work and we are glad to have it. We welcome to the committee Norman N. Baker who brings us his hospital experience, Colonel F. R. Franzoni who brings his recent military experience as well as Dr. Noel Foss who is no stranger to our activity. We also welcome Dr. Ralph Clark with whom I have worked with before and welcome the opportunity of doing so again.

In order to facilitate the work of the committee and cut the expense of operation our activity except in an advisory way has been centered in a smaller steering committee which has held two meetings in Washington during the year. The reports of the Steering Committee have been circulated to the committee members who have to a great extent commented on the work and have made valuable suggestions, most of which have been embodied in this report.

The Steering Committee at this time is comprised of the Chairman, Dr. Robert P. Fischelis, George H. Frates, Washington representative of the National Association of Retail Druggists, F. Royce Franzoni and Dr. Noel E. Foss.

The work of the committee has been facilitated also because of the competent efforts of the pharmaceutical leaders of the various government services, Colonel O. P. Goriup, Commander W. P. Briggs, Commander George Archambault and E. Burns Geiger of the Army, Navy, U.S. Public Health Service and Veterans Administration respectively.

A. The Army

During the year the Medical Service Corps of the Army lost some of its members to the Air Corps which is now a separate branch of the Armed Services. The new Surgeon General of the Air Corps, Major General Harry G. Armstrong, M. C., is well versed in the problems of military pharmacy. We have been advised that the Air Corps will follow the same pattern as the Army as far as the Medical Service Corps is concerned. Lt. Colonel How-

ard Nelson one of the original group of commissioned pharmacists is among those who have been transferred to the Air Corps as well as Major John Painter who as head of the Pharmacy Section of the Medical Service Corps of the Army was introduced to this group at the Jacksonville Convention.

Discussions with Colonel Goriup on the status of pharmacists in the Army brings us the following information. Table of Organizations are being revised upward so that more key positions are available to pharmacists and other Medical Service Corps officers. There are some officers who still feel that the transmission of important posts from Medical Officers to Medical Service Corps officers is moving too slowly and that we must make a stronger play to bring the promotion schedule up so that the MSC will meet the Army average of 8 per cent Colonels instead of the 2 percent permitted under present law. This matter was further discussed with Colonel Goriup who stated that there was no immediate need for the legislation, that the Surgeon General did have the law change on his calendar but that there were at present more pressing legislative needs. The Committee has considered the advisability of presenting legislation of its own and has discussed the matter with Mr. Durham and Brooks of the Armed Services Committee of the House of Representatives. They have promised their support—It has been pointed out by other pharmacy officers of the Army that pharmacy made very little advance in the Services until the profession did press the point rather vigorously even to the extent of presenting legislation of its own which you will remember was successfully passed during the chairmanship of Dr. Kendig. However Colonel Goriup feels that the fine relationship that presently exists between the professions of medicine and pharmacy in the Army might be disturbed should we press legislation at this time. The committee is watching the matter very carefully and will keep the situation in the full view of the Surgeon General.

Resolutions similar to those passed at the Jacksonville convention were presented by the committee to the convention of the National Association of Retail Druggists at their 1949 meeting. These resolutions designed to eliminate the promotion discrimina-

tion were passed and copies sent to the Surgeon General and the Secretary of Defense.

The Steering Committee feels that Colonel Goriup is pressing the point and this action might suffice at this time. Colonel Goriup has stated that with the exception of the morale feature of the limitation of Colonel, the Corps is not hurt at the moment since he states that we do not have sufficient eligible Lt. Colonels to utilize existing colonel authorization. To introduce legislation in this session of congress would according to Colonel Goriup not be needful.

B. The ROTC

Four units of Pharmacy Reserve Officer Training Corps are in operation. A number of outstanding graduates of these units have been recommended for Regular Army Commissions. It has been rather disappointing that all of the young men who were offered these commissions did not avail themselves of the opportunity for service. Thereby adding to our pharmaceutical strength key men who would pave the way for others. Among the reasons advanced by those who refused commissions is that they were not offered sufficient time to accept or reject. They wanted to explore other fields a bit. There is no question but that outside employment in pharmacy is particularly lucrative, but it is felt that the Services giving other advantages with salary offer opportunities that are equal and in many cases surpass those of civil life. Salaries of pharmacists in all branches of Government Service have been upgraded and promotion opportunities are increasing in step with other fields of pharmacy.

The colleges that have the ROTC units are well pleased with the pharmacy instructors assigned. It is felt that these men are doing an unusual job in interesting pharmacy students in a military career and that we cannot be too disturbed by occasionally losing potential officer material.

We have been assured by Colonel Goriup that the officers in the Surgeon General's Office as well as the officers of the General Staff have the highest praise for the Deans of our four pharmacy ROTC Units. These officers have visited with these deans and it is their opinion that the pharmacy deans are outstanding in

their enthusiasm for their units and are fully aware of their responsibilities.

Discussions with regard to expansion of ROTC units are still going on. Colonel Goriup feels that our present program meets the over all requirements of the Army. There has been some discussion with regard to working out an ROTC program where the various specialties can be grouped into one unit. Dr. Rogers who has made a study of this seems to feel that nothing should be done to disturb the present type of Pharmacy ROTC unit. That the present type of organization best serves the interests of pharmacy. This matter is being further explored by the committee.

C. The Navy

The Pharmacy Section of the Navy's Medical Service Corps is proceeding slowly and satisfactorily under the capable direction of Commander W. Paul Briggs, MSC. In response to our queries we find that the current commissioning program is proceeding thru routine procurement channels. While the number of pharmacists in the Service is not high, Commander Briggs feels that the absorption is proceeding satisfactorily and that selections are being carefully made to keep orderly balance in rank and duty assignments. Commander Briggs states that within the next two or three years, pharmacy in the Navy will be in a strong position, at which time tangible evidence of progress should become apparent. At the beginning of the year some of the officers felt that because of the salary situation and some promotion problems that they were making quite a sacrifice—financially speaking—to stay in the Service. However during the year this situation has been improved with a new pay schedule which affected all of the Armed Services. The same promotion limitations exist in the Navy as does the Army. However Commander Briggs also states that this is not a problem of the moment and that he feels certain that the Navy will not oppose legislation that might be introduced by any of the other Services to remedy this situation.

D. The Public Health Service

Pharmacy in this branch of the Service has been making unusual progress under the capable direction of Commander George Archambault and his associates. There are thirty-one pharmaceutical units in the hospitals and clinics of the Service. There are at present (March 6th, 1950) 49 Regular and Reserve Commissioned Officers on duty. Some pharmacists as commissioned officers are assigned to other duties than in hospitals and clinics as pharmacists. These duties include assignment to the Division of Commissioned Officers, Divisions of Supply, Bureau of Medical Services, Division of Hospital Facilities, operation of a pharmaceutical manufacturing laboratory, Foreign Quarantine Inspection Officer duties at Rosebank, New York, Honolulu and San Juan as well as assignments in pure research at the National Institute of Health.

A satisfactory number of applicants were examined at the March 6-8, examinations that were held in many central cities throughout the country.

E. The Veterans Administration

This branch of the government now employs 375 professional pharmacists. Of this number approximately 350 have permanent or probational Civil Service Status. The other 25 have either War Service Indefinite or Temporary status and in most cases do not meet the educational requirements for conversion. Contracts have been awarded for 43 new hospitals. Most of these will be completed during the calendar year 1950-51. These facilities will all have pharmaceutical installations. There are at present pharmaceutical services in 133 hospitals and 70 regional offices. Other than hospital facilities there are no other contemplated increases in the VA.

Pharmacy in VA under the capable direction of Chief Pharmacist E. Burns Geiger has become one of the greater pharmaceutical functions of the Government Service. Grade of Pharmacists have been satisfactorily advanced in this department so that very little difficulty is being experienced in obtaining satisfactory personnel with the exception of certain areas. Four mil-

lion three hundred and seventy-six thousand prescriptions were filled by VA pharmacists last year.

F. Women In Government Pharmacy

Some inquiries during the year have directed attention to women in government pharmacy. Both men and women are eligible to file in the Veterans Administration. Civil Service Commission Standard Form 57. The United States Public Health Service makes no distinction between males and females relative to careers in the Service. Both ar eeligible for Reserve and Regular Corps appointments. At present Miss Jean Lynch, Senior Assistant Pharmacist Officer (equivalent to Captain in the Army) is in charge of Chicago Marine Hospital Pharmaceutical Service; Mrs. Margaret Gary, Senior Assistant Pharmacist is in charge of the pharmacy operation at Norfolk; two other women are serving as staff pharmacists at Norfolk and Seattle. While the Army and Navy Medical Service Corps do not offer commissions to women at this time—Senator Margaret Chase Smith made sure that when the law was passed setting up these Corps, women were not prohibited from Service because of the language of the law.

The Women's Army Corps does offer an opportunity for commissioned service to women graduate pharmacists who hold a B.S. degree from an accredited college and are within legal age limits required by regulations. While serving as commissioned officers of the WACs they may be assigned to any duties that an officer of the Service may fulfill which are likely to be other duties than pharmaceutical. We have been informed that the Department of the Army is sponsoring legislation which would authorize the appointment of women specialists in all branches of the Medical Department. Those women pharmacists who are interested in the WAC might write directly to the Director of the Corps, Washington 25, D.C. It is well to remember that pay and other opportunities for men and women are equal.

G. Pay In Government Service

It is felt by the committee that there would be some interest in the present pay status of pharmacists in the various branches of

Government. While these figures may be subject to some variations it is felt that they reflect the situation at this time.

Public Health Service	Comparable Rank	Armed Service	Annual Pay (Initial)				
			Married		VA and Civil Service		
Jr. Ass't	2nd Lt.	Ensign	3969.00	3789.00	GS 5	3100.00	3850.00
Ass't	1st Lt.	Lt. J. G.	4486.56	4306.56	GS 7	3825.00	4575.00
Sr. Ass't	Capt.	Lieut.	5346.00	5166.00	GS 9	4600.00	5300.00
Full Grade	Major	Lt. Cmdr.	6165.00	6111.00	GS11	5400.00	6400.00
Sr. Grade	Lt. Col.	Cmdr.	7416.00	7056.00	GS12	6400.00	7400.00
Director	Colonel	Capt.	8786.00	8604.00	Chief in VA Not under Civil Service		8800.00

There was some discussion of H.R. 6022 which is designed to increase certain salaries in the Department of Medicine and Surgery of the Veterans Administration. It was felt this bill should include pharmacists but upon examination it was learned that pharmacists were taken care of in Public Law 429 which increased salaries of certain professional categories in Civil Service. This bill includes pharmacists and is reflected in the above schedule which has placed all the pharmaceutical service of the Government in approximately the same pay range.

Summary and Recommendations

It is felt by some of the heads of the government pharmaceutical services that the committee should meet at one time during the year with all of the pharmaceutical government heads in a combined conference. I feel that this would be a good step as the resultant discussions would be of benefit to the entire group. We have as a Steering Committee met with each in the past individually. There is a great deal of merit to a round table discussion between all of the heads of government pharmacy and the Steering Committee at least since funds and other problems may make it impossible for the entire committee to meet.

The resolutions passed at the Jacksonville convention should continue in our sight. The elimination of the promotion limitations to the rank of Colonel in the Medical Service Corps of the Army and Captain in the Navy should continue as an objective, as well as providing for a normal percentage of General Officers. It has been pointed out that the Dental Corps for instance with

several hundred officers has a Major General and the Medical Service Corps with almost a thousand officers has a top rank of Colonel.

This can be accomplished by continuing to point out that Medical Service Corps officers should be assigned to the higher administrative posts. Shortages of Medical Officers still continue to be a problem in the Medical Department of the Armed Services. This problem will not be solved until practically all Medical Officers are assigned to duties that they are trained to do thru basic education. This was one of the primary reasons for setting up the MSC but all of its purposes have not been met with since many of the supply functions and supply depots are headed by physicians. This situation would be changed when sufficient MSC officers have advanced to sufficient rank to take over these responsibilities. With a definite program it could be solved in time.

Opportunities and salaries continue on the upgrade. It is hoped that the information gathered in this report will receive wide circulation among the students and younger pharmacists who are looking for places to start their careers. The deans of the colleges and secretaries of the pharmaceutical associations can be helpful in this. Copies of this report are being sent to them with this in view. We can supply additional information but suggest that the heads of the various Government Services be contacted by the applicant.

We are particularly interested in directing attention to the Reserve Corps of the various branches of the Service. Many opportunities present themselves to former officers and enlisted men to obtain promotion in the interim between wars as well as certain retirement privileges afforded by newer regulations. Retirement pay has been figured at equal to an annuity of from 10 to 50 thousand dollars. At the same time the more pharmacists we get into the Reserve the more key positions will be filled by pharmacists during times of national emergency thereby paving the way for many more thousands to get the benefit of commissioned service rather than enlisted. Organized pharmacy has made a place for pharmacists but pharmacists will have to show by their interest and example that they really want the place that has

been provided for them. Other professions allied in medicine also have the opportunity to take over key positions in this Corps. We are fortunate that the head of the Corps at the present time is a pharmacist and thus has some knowledge of our potentialities. There is no assurance that the next head of the Medical Service Corps will be a pharmacist so it is important that we make our gains now and show our worth. We are extremely fortunate that a number of the officers of the old Medical Administrative Corps are pharmacists and are still in the Service and of sufficient rank to be of some importance. We need to support these men by giving them many young men to follow in their wake. This is the responsibility of those of us who are active in pharmacy organizations to do the necessary work to interest many young men in the future that the Service holds for them as well as their patriotic responsibility to help carry on.

I am deeply appreciative of the many letters and helpful guidance that I have received from the members of the committee as well as others who are interested in our work. The readiness of Dr. Fischelis and George Frates to jump in and handle problems as they develop in Washington has made the job easier and substantially reduced the cost of our operation. My thanks also goes to Dr. Swain who serves as our treasurer in addition to his many other responsibilities and the members of the Steering Committee who have to leave their posts occasionally at short notice to take care of some of the problems that develop from time to time. Mr. Carl T. Durham, Congressman of North Carolina, who has done so much for pharmacy in the past, continues to merit our applause for his many accomplishments in our behalf as well as the nation in general. We are hopeful that we will continue to have his guidance and help for many, many more years.

ARTHUR H. EINBECK, *Chairman.*

Report of the Representatives to the National Drug Trade Conference

The 1949 annual meeting of the National Drug Trade Conference was held in the Hay-Adams House, Washington, D. C., on

December 2, 1949. Hugo H. Schaefer and Thomas D. Rowe, substituting for Ernest Little who was unable to be present, represented the American Association of Colleges of Pharmacy. Dean H. Evert Kendig, the third A.A.C.P. delegate was not able to attend on account of illness.

President Frailey opened the meeting with brief but appropriate remarks and Treasurer Ray Schlotterer then presented his report. This was followed by a number of routine committee reports.

The afternoon session opened with a series of talks on Developments in the Implementation of The Pharmaceutical Survey. The following participated:

a. P. H. Costello on, "Pharmaceutical Education."
b. Hugo H. Schaefer on, "As Viewed by the Colleges."
c. Robert P. Fischels on, "Man Power and Legislation."
d. E. C. Elliott on, "Summarizing The Survey Accomplishments."

Dr. E. L. Newcomb discussed the work of the American Foundation for Pharmaceutical Education and the urgent need for contributions to insure the continuation of its program and to cover the 1950 budget. He also described the plan of operation and the work of the Bureau of Education on Fair Trade and of the proposed drug store handling costs survey.

Hugo H. Schaefer read a short paper on the subject, "Informative Retailer Labeling on Prescription Items" and presented a resolution embodying some recommendations on this problem.

George H. Frates discussed the subject of, "Excise Taxes" and appealed for support in efforts to abolish certain of such taxes.

The following resolutions were adopted by the Conference:

1. RESOLVED, that the National Drug Trade Conference approves suitable national legislation having for its purpose relief for the drug industry, in the production of drugs and medicines, from the imposition of the present tax on ethyl alcohol and authorizes the sending of a copy of this resolution to every member of Congress.

2. RESOLVED, that the National Drug Trade Conference reaffirms its position adopted in resolutions of previous years and approves legislation to repeal the excise tax on toiletries, and authorizes the sending of a copy of this resolution to every member of Congress.

3. WHEREAS, there is a constant increase in the number of drug preparations under the prescription legend, and

WHEREAS, under the provisions of the Federal Food, Drug & Cosmetic Act no dosage statement of any kind may appear on the labels of such preparations, and

WHEREAS, pharmacists bear the responsibility of checking the dosage of such drugs when prescribed by physicians,

WHEREAS, the recent announcement of the Food and Drug Administration permitting the sending of professional literature to pharmacists merely gives approval to a procedure long in effect but in no manner solves the problem since the mailing of such literature is not made mandatory, and

WHEREAS, even if such literature were sent to every pharmacist previous to the sale of a prescription product it would be a practical impossibility for him to keep in reference form the many thousands of such cards, booklets and circulars,

THEREFORE, BE IT RESOLVED, that the National Drug Trade Conference recognizes the public health need of a dosage statement appearing on the label or in the labeling of drugs sold under the prescription legend in some manner which would be informative to the pharmacist, and be it

FURTHER RESOLVED, that a special committee or a suitable existing committee be directed to further explore the possibilities of bringing about such a modification of the present labeling provisions and their official interpretations.

4. RESOLVED, that the Committee on Uniform State Legislation be continued and that the Committee be requested to continue to survey the field of pharmaceutical legislation in the interest of developing uniformity of state regulatory procedure as much as possible.

5. RESOLVED, that the National Drug Trade Conference again fully endorses the work of the American Foundation for Pharmaceutical Education and urges retailers, wholesalers and manufacturers within the drug and allied industries to continue to give liberal financial support to the Foundation in order that sufficient funds may be available to carry out its plans to the end that pharmaceutical education and the practice of pharmacy may be improved and advanced.

6. RESOLVED, that the National Drug Trade Conference in annual meeting assembled, expresses its active support of an expanded program of voluntary health insurance plans, and expresses its vigorous condemnation of any plan, governmental or otherwise, which would deprive the public health professions of their independent professional status, free of political control, or would, in effect, socialize the field of medical care.

7. RESOLVED, by the National Drug Trade Conference that the States be urged to enact the Uniform State Barbiturate Bill of the National Drug Trade Conference for the state regulation and control of barbiturates and their preparations.

8. RESOLVED, that in the process of bringing about uniformity between the State and Federal Narcotic Acts, the States give due con-

sideration to the inclusion of synthetic narcotic drugs, and to the exempt sale of derivatives of certain narcotic drugs.

The following officers were elected to serve during the coming year:—President, Carson P. Frailey; Vice President, Frederick J. Cullen; Secretary-Treasurer, R. C. Schlotterer. Hugo H. Schaefer was designated to represent the A.A.C.P. on the Executive Committee of the Conference.

HUGO H. SCHAEFER, *Chairman.*

Report of the Delegate to the American Council on Education

The program at the Washington meeting was devoted to "Education in the Proposals for the Reorganization of the Federal Government," "Freedom to Teach and Freedom to Learn," "The Free University of Germany," (film), "The 1950 White House Conference on Children and Youth," and "New Developments in Adult Education." The registration at the meeting included representatives from all of the member associations which participate in the activities of the American Council on Education.

As indicated by the titles, the first presentation appeared to be of most interest to the members of our Association, particularly since it has been reported that the Federal Government is gradually encroaching upon every field of endeavor, including education. It was interesting to note that this subject has received consideration by the American Council on Education since 1918. At the present time, there are fifty-seven departments of the Federal Government that supervise or direct activities of education, resulting in considerable waste, inefficiency and futility. All authorities seem to agree that there will be many advantages both from the standpoint of administration and accomplishments if the educational functions of the various departments were properly consolidated under one central bureau. The Federal Government has for many years been subsidizing specific fields of education, not-

ably agriculture. In 1949 the Federal Government appropriated $50,000,000 for education and research; in 1950 it appropriated $120,000,000; and it is estimated that in 1951 the Federal Government will subsidize education and research to the extent of $434,000,000—all of these amounts being exclusive of sums allocated to the Department of Agriculture for education and research. All the speakers were in agreement that education at all levels desires freedom from political partisanship. The issue at present is not if we shall have Federal subsidization for education, but rather, the most efficient manner by which the Government can subsidize education.

Although a number of alternatives were discussed, the two most acceptable plans were presented by Dr. Edgar Fuller, Executive Secretary of the National Council of Chief State School Officers, and Dr. George D. Stoddard, President of the University of Illinois. Dr. Fuller proposed the formation of a Federal Board of Education which, with a Commissioner of Education, would establish the non-partisan policy to be followed by the Department of Education. He cited the long standing success of boards of education on the local level and even on the state level in some localities. Dr. Fuller added that the Hoover Reorganization Plan for an Office of Education under the Secretary of Welfare was wholly unacceptable.

Dr. Stoddard is of the opinion that it will require a Secretary of Education as a separate department if the Government is to fully consolidate and maintain a Department of Education which will carry out the activities now being performed by the fifty-seven separate departments. Dr. Stoddard opposed the inclusion of education in the Welfare Department since education is a preparatory influence while welfare activities are a clean-up influence after misfortune has struck. He favors the formation of a Department of Education, Health and Science, with an Assistant Secretary of Education.

Unfortunately, the writer will be unable to attend the Thirty-third Annual Meeting of the American Council on Education on May 5th and 6th due to the conflict with the dates of the Atlantic City meeting of the American Pharmaceutical Association. The program will be built around the subject, "American Edu-

cation Faces the World Crisis," and will include such distinguished speakers as Dr. James B. Conant, President of Harvard University, Dr. George D .Stoddard, President of the University of Illinois, and Mr. Edward R. Murrow, Vice President and Director of Public Affairs, Columbia Broadcasting System.

NOEL E. FOSS, *Delegate.*

Report of the Committee on Predictive and Achievement Tests

Due to changes in personnel, including the selection of a new chairman, the committee began its work at a rather late date. However, it has directed its attention to two matters upon which it wishes to report.

(1) *Functions of the Committee*

The committee was first established as one of the special committees of the Association in 1935. Since then its work has consisted, at various times, of developing and administering predictive and achievement tests, serving as an advisory group in The Pharmaceutical Survey's student personnel studies, and remaining inactive when conditions were such that it could not function properly. In 1948 the committee was directed to resume active work.

During the past year, the present committee has reconsidered its possible and feasible functions and has concluded that they are the following:

1. **To encourage the member colleges to carry on sound testing programs, and to furnish such information as will be helpful to them.**
2. **To collect and disseminate information concerning the member colleges' testing programs.**
3. **To furnish expert pharmaceutical advice to whatever group may be established to develop pharmaceutical aptitude and achieve-**

ment tests, and to act in a liaison capacity between such a group and the Association and its members.

From the results of the study described later in this report, the committee is of the opinion that a sound testing program can be a valuable adjunct to the present methods of selection for admission to the study of pharmacy. It does not believe that admission should be solely on the basis of test results. However, the experience of several colleges indicates that the information obtained from standard tests is useful in predicting the probable success of applicants. The committee, therefore, urges those colleges who do not now employ such tests to consider the advisability of doing so in the very near future.

As the committee's studies develop, and its store of information increases, it will be in an increasingly better position to provide information concerning testing programs to those colleges which may be desirous of initiating such programs as well as to those who wish to improve their present programs.

At the present time, no battery of strictly pharmaceutical aptitude tests appears to be in use. Those institutions which are carrying on testing programs employ batteries of established general aptitude tests with generally satisfactory results. However, there is a growing feeling that there is a need for the proper means of determination of those aptitudes which are requisite for the study of pharmacy. In this connection it is interesting to note that Dr. H. H. Remmers, in reporting on the personnel studies of The Pharmaceutical Survey, has proposed, "a continuing mechanism . . . to carry on testing for purposes of selection, guidance, placement, licensure, and so forth. The two major functions of such a continuing mechanism are *service* and *research*." These functions would be resident in a "bureau of educational research in pharmacy located in an institution that has a school of pharmacy, so that new materials could be tried out in a continuing development program."

The committee feels that the establishment of such an educational research bureau would be very desirable. It is aware, however, that rather sizeable sums of money would be necessary to operate such an establishment and that such sums would undoubtedly be difficult to obtain.

Another proposal which has come to the attention of the committee relates to the possibility that some service and research might be available through schools of education having graduate students who are candidates for degrees in the field of educational testing.

The committee has not been able to give proper consideration to these proposals but it is our hope to do so during the coming year.

(2) *Predictive Testing in Colleges of Pharmacy*

In order to determine the status of predictive testing in the colleges of pharmacy, the committee sent a questionnaire to the deans of sixty-nine colleges. By March 15, 1950, replies had been received from fifty deans. The figures given here were compiled from these fifty replies.

That predictive testing, for one purpose or another, is widely carried out is apparent from the fact that forty-two of the fifty colleges replying stated that they have a predictive testing program. Colleges connected with larger institutions usually participate in the general programs of those institutions although this is not invariably the case.

Seventeen colleges stated that they routinely employ test results as a part of the criteria for the selection of all applicants for admission. An additional four colleges make use of test results in considering applicants who ranked in the lower fractions of their high school classes. Thus, twenty-one colleges, or 42 per cent of those replying, employ test results as part of the criteria for determining admissibility.

Among those who do not have testing programs, some stated that they desire to have them but have not yet found it possible to do so; others now require one or more years of prerequisite college work for admission to the college of pharmacy; still others feel that their present methods of selection are satisfactory and would not be made more efficient by the use of test results.

In many instances, particularly where the college is associated with a larger institution, the tests are administered during

an orientation period after admission. In such cases, the test results are employed for guidance and counseling purposes.

More than forty different tests are employed in the testing programs of the forty-two colleges. The most frequently used test is the American Council on Education's Psychological Test. Others of considerable popularity are the A. C. E. English and Scientific Achievement Tests, Cooperative English Test (various forms), Cooperative General Achievement Tests (Mathematics and Science), the Kuder Preference Record, and the tests of the College Entrance Examination Board.

Since the cost of a testing program is of importance, the committee requested information concerning total cost and number of applicants tested. Thirteen colleges furnished data sufficient to allow the calculation of the cost per applicant. The most expensive program reported cost approximately $3.45 per applicant while the least expensive ones entailed no cost to the institution. In the latter instances the costs were defrayed by charging the applicant a fee of about $5.00. In a number of cases it was reported that the college of pharmacy staff members conducted the testing program without additional compensation. Thus, the costs calculated from the data available to us do not necessarily represent the total cost.

The committee did not make any attempt to determine the validity of the testing programs now in operation, since such a determination would involve more time than was available and would require the assistance of a competent expert. It is hoped that some effort in this direction may be made in the near future. However, the voluntary remarks of the deans whose colleges have carried on testing programs for purposes of admission indicate that in their opinion, the test results have been of definite value in determining admissibility. Several such comments are appended to this report for the information of the members of the Association. We have also included two comments from colleges that do not feel that predictive testing is valuable.

Conclusion

The committee reaffirms its belief in the value of predictive testing in determining, in part, the admissibility of applicants to

the study of pharmacy, and urges each member college not now carrying on such a program to consider seriously the advantages of doing so. Even though a college now requires pre-pharmacy collegiate training, its present criteria for admission may be materially strengthened by the determination of aptitudes peculiarly relating to accomplishment in the field of pharmacy.

The committee believes that a continuing study of the testing programs of the member colleges will be of assistance in determining the true value of such programs.

Recommendation

The committee recommends that its work be continued.

E. L. CATALINE, *Chairman.*

Report of the Committee on Pharmaceutical Research

Our Association has concerned itself with research through committees for a third of a century. A Committee on Research was established in 1917 and functioned for twelve years under the chairmanship of research-minded professors of a generation ago, such as Dr. Henry Kraemer, Dr. Edward Kremers, Dr. Albert Schneider and others. This standing committee was discontinued in 1929, when the committee requested that it be permanently discharged because everything such a committee could do had been done.

In 1930 it was voted to amend the constitution, so that it would call for the promotion of research as well as pharmaceutical education. This change in the constitution had been recommended by the Committee on Research in 1928.

An Association committee designated as "Committee to Consider Requiring Colleges to Have a Professor for Research" functioned from about 1926 to 1929.

The present Standing Committee on Pharmaceutical Research was activated in 1943 following a recommendation in the Chairman's address "That through an appropriate committee, our Association appraise its present work in promoting pharmaceutical research, reaffirm its policy in this activity and urge increased participation in it by faculty members."

College of pharmacy administrators can promote pharmaceutical research in their respective institutions by working for better research facilities, better financing of research projects and better salaries to attract men of greater ability.

An immediate problem is the serious overcrowding of research facilities in some of our colleges. Such overcrowding is not conducive to successful research. Overcrowding can and should be eliminated by deciding how many research workers can be accommodated by the equipment and space available, and then refusing to admit further candidates until more facilities are available.

Another urgent problem which has arisen in some colleges is the lack of adequate supervision of graduate students engaged in research. Too many research students are assigned to professors whose teaching load is increased to the pooint that they do not have sufficient time to discharge their responsibilities. Administrators should make definite provision so that the teaching load of professors directing research be proportionately decreased for each graduate student whose work they are directing. Generally a professor should be given credit for ten per cent of a teaching load for each master's research project he is supervising and fifteen per cent of a teaching load for each Ph.D. candidate actively directed in research.

WILLIAM J. HUSA, *Chairman.*

Report of the Committee on Professional Relations

During the year two assignments were given to this committee.

I. The Executive Committee referred to this committee the following recommendations from subcommittee No. 3—a committee

appointed to study the Findings and Recommendations of The Pharmaceutical Survey. It was also suggested that the Committee on Professional Relations might wish to have the topic discussed by each of the eight districts.

> **"IT IS RECOMMENDED that the American Association of Colleges of Pharmacy create a standing committee, the duties of which should be (a) to develop uniform plans to be followed by the colleges or schools when making prescription studies; and (b) to assemble and publish the results of the studies made by individual institutions. Such assembly of results should be made available to the medical schools of the country."**

The Committee on Professional Relations submits herewith a *suggested outline of prescription surveys for use by members of the American Association of Colleges of Pharmacy.* In accordance with the suggestion, this outline was sent to the secretaries of the eight districts with the request that it be discussed in district meetings and that further suggestions for possible improvement be made by them. The Chairman of this Committee presented this outline before the meeting of District No. 3. Several valuable suggestions were made and these have been incorporated in the outline. District No. 3 passed a resolution which is being submitted through regular channels and which is to the effect that in conjunction with such prescription surveys an auxiliary survey of physicians should be made to gather their reactions on: (a) should medical schools teach more materia medica and prescription writing; (b) knowledge of laws and regulations dealing with refills and dangerous drugs. The results of this auxiliary survey of physicians should be submitted to the medical schools.

District No. 2 submitted the following resolutions:

> **"BE IT RESOLVED, that the Secretary of the Boards and Colleges of District No. 2 notify the Chairman of the Professional Relations Committee of the A.A.C.P. that they approve the appointment of a standing committee, the duty of which would be to develop uniform plans to be followed by the colleges or schools in making prescription studies;**
>
> **"BE IT FURTHER RESOLVED, that this conference recommends the compilation and publication of the results of such studies."**

II. The Executive Committee also referred to this committee the following resolution which was adopted by the A.A.C.P. in Jacksonville:

"BE IT RESOLVED, that a committee of the Association be appointed to study and outline suggested courses and programs for in-service professional instruction of practicing pharmacists and make these available to the member colleges as early as possible."

Such an outline is included in this report.

Recommendation

That a standing committee be appointed—(a) to further develop plans to be followed by colleges or schools in making prescription studies; (b) to assemble and publish the results and make them available to colleges and schools of pharmacy and medicine.

Suggested Outline of Prescription Surveys for Use by Members of the A.A.C.P.

General Statement

Purpose: To gather information which will be helpful in teaching in colleges of pharmacy and medicine.

Areas: By states or other geographical areas.

Places: (a) usual type drug stores; (b) "prescription" pharmacies; (c) hospital pharmacies.

Personnel: May be conducted by: (a) students under faculty supervision; (b) store personnel; (c) pharmacy internes or apprentice pharmacists.

Expense: Funds may be secured from college-budgets and/or contributions from interested associations, firms, and individuals.

Details: This outline is only suggestive and perhaps covers a minimum of desirable information. Many more details may be added such as were used in the "St Louis" survey and others. Determining factors include time required, expense, and number of personnel available.

Number to be Analyzed; From 1000 to 5000 from each state or area chosen. A national survey should include from 50,000 to 250,000 prescriptions. The following is suggested: 30 to 150 from each of: (a) 10 average drug stores; (b) 10 "prescription" pharmacies; (c) 10 hospital pharmacies.

Current Prescriptions only should be analyzed because of the continual change in prescribing habits. In fact, it may be advisable to study prescriptions a month at a time for 12 months to see how certain items are prescribed on a yearly

basis. For seasonal consideration: summer and winter—twice a year; spring and fall—twice a year; or four times a year.

Theoretically it would be advantageous to include refills; however, it does not seem practical because: (a) very few drug stores keep a record of their refills; (b) the survey is designed for current prescribing habits.

Students might bring in actual copies of prescriptions from various stores. Tabulation would then be made by members of the Pharmacy Department.

Prescription Analysis

1. **Form of Medication:**
   Liquids; Tablets; Capsules; Pills; Ointments; Emulsions; Suppositories; Lozenges; Powders, divided and bulk; Inhalations; Injections; Infusions; Pastes; Cerates.

Miscellaneous

2. **Therapeutic Classification:**
   Analgesic; Anesthetic; Anti-infective, local and systemic; Automatic; Cardiovasuclar; Choleretic; Cough Prep.; Diuretic; Urinary Antiseptic; Gastrointestinal; Antacid, laxative. Other; Hematinic; Histamine Antagonists; Hormone, Sex, Other; Metabolic; Sedative & Hypnotic; "Tonic"; Vitamins, Praphylactic, Therapeutic, Other.
3. **Manufacturing by Pharmacist:** (a) number and quantities of official products; (b) specialties.
4. **Number of Ingredients:** 1, 2, 3, 4, 5, _____etc.
5. **Prices of Prescriptions.** Also, a few type prescriptions for pricing by the pharmacist to determine his ability in arriving at an average price.
6. Prescriptions compounded by: (a) the pharmacist; (b) a manufacturer. Items prepared in quantity by the pharmacist prior to use would be considered as if they were prescriptions filled by a manufacturer; that is, not compounded prescriptions.
7. No. of prescriptions containing U.S.P., N.F., and N.R.R., drugs.
8. No. of prescriptions containing at least one or more U.S.P., and N.F., drugs plus one or more proprietary drugs.
9. Number of prescriptions containing only proprietary drugs.
10. Classification of most important ingredients: (a) list and frequency of occurring items; (b) order of frequency of occurrence of most important derivatives of drugs in groups such as sulfa drugs, vitamins, antihistaminics, antibiotics, hormones, etc.

11. Frequency of occurence of prescriptions written in: (a) Latin; (b) English.
12. Frequency of occurrence of prescriptions using: (a) metric system; (b) Apothecaries system.
13. Frequency of occurrence of U.S.P., N.F., and N.N.R., drugs.

Outline of Suggested Courses and Programs for In-Service Professional Instruction of Practicing Pharmacists

1. **Refresher Courses** seem to be the best medium for continuation study. In metropolitan areas it seems most convenient for pharmacists attending when it is offered during several evenings of a two-week period. In areas not so thickly populated, two-day courses are recommended. The program should include not only information but also inspiration. For environment and facilities the college should be the meeting place if possible. Instruction may come primarily from faculty members. One or more guest lecturers are recommended. One dean reports that it has been more successful to use non-faculty personnel who are specialists in given areas. Cost of the course may be defrayed in various ways such as from college funds; contributions from associations, firms and individuals; registration fees.
   a) **Prescription Clinic.** This should be the core of the refresher course and deals with the compounding of new and unusual prescriptions. Materials may be obtained from college files, practicing pharmacists, and hospital pharmacies.
   b) **New Drugs.** For each drug discuss the chemistry, pharmacology, indications, side-effects, advantages, dosage, dosage forms, cautions, and any incompatibilities.
   c) **Problems of Operating the Prescription Department.** Lectures may deal with location, arrangement, equipment, purchasing, inventories, prescription routing, pricing and filing, packaging, records, delivery, general policies, laws, etc.
   d) **Trends in Therapeutics.** To be presented preferably by a preeminent member of the medical profession, preferably by a specialist discussing his specialty.
   e) **Economic and Professional Trends.**
   f) **Inspirational Address** by a successful pharmacist.
2. Exhibits and talks before associations of pharmacists.
3. Articles on professional subjects to be published in journals of state pharmaceutical associations. Journals serving a particular area of several states may also be used. A series of

one each month by a different faculty member is a possible plan.

4. **Monthly or periodic bulletins from the college may be used to assist in the in-service training of pharmacists. Some suggestions for topics may be found under (1) Refresher Courses.**

PERRY A. FOOTE, *Chairman.*

Report of the Committee on Functions of the American Association of Colleges of Pharmacy

The American Conference of Pharmaceutical Faculties was founded by representatives of twenty-one colleges or schools of pharmacy in 1900. There had been in existence a "Conference of Schools of Pharmacy" from 1870 until 1884 when it was discontinued from an apparent lack of interest on the part of the schools of pharmacy. Te objective of the newly established American Conference of Pharmaceutical Faculties was: "The object of this conference shall be to promote the interests of pharmaceutical education." Dr. A. B. Prescott was elected the first president. Although he was in Wales at the time of the Second Annual meeting he prepared an address which was read by J. P. Remington. In his address President Prescott suggested that "papers, and brief oral propositions, would be of special value upon the following named subjects:

1. **Teach methods in the cardinal subjects of pharmacy. For example:**
   - **(a) Upon the order of the subject-matter, upon experimental demonstration in lectures, upon reviews and quizzes in relation to class standing and final examination.**
   - **(b) Upon the best succession of studies in graded college work, and requirements for admission to given studies.**
   - **(c) Upon laboratory methods in any of the leading studies.**
   - **(d) Upon text-book recitations, and ways of instituting library work and the use of books for reference.**

(e) As to final examinations, in relation to examinations for credit upon completion of each study, in a graded college course.

2. What subjects may be counted as required studies (for graduation); to what extent may certain elective studies be offered of which a given amount is necessary (for graduation); and of what benefit are optional studies over and above requirement for graduation?

3. What general education, in kind and amount, should be required (a) of those who receive the diploma of the college, (b) of those allowed to take any or all of the college work?

4. How can college students be inspired with the spirit of pharmacy, informed upon its professional and commercial questions, and enlisted in its advancement?

5. How can public and financial support be gained for the institutions of pharmaceutical education?"

In the present constitution of the A. A. C. P., Article II objectives: "The objective of the Association shall be to promote pharmaceutical education and research." The only change being the addition of the words (and research). It is also evident that the problem as presented by President Prescott and the thinking of fifty years ago are similar in many respects to the demand of the present.

From time to time the Association has assumed many and varied obligations. Perhaps most striking was that period when the A. A. C. P. was the official accrediting agency for schools and colleges of pharmacy. Now that this task has been taken over by the American Council for Pharmaceutical Education, the A. A. C. P. has been relieved of this duty. In The Pharmaceutical Survey the Director of the Survey always considered the A. A. C. P. as the body representing the schools and colleges of pharmacy and cooperated to the fullest extent with its officers. He did not analyze and set forth recommendations concerning functions and purpose of the organization.

To this end President Christensen appointed a committee on Functions of the American Association of Colleges of Pharmacy to begin a study of what may be the role of the A. A. C. P. in pharmaceutical education. The following preliminary general statements are presented for consideration:

Purposes and Functions

1. **To provide a center of cooperation at the intercollegiate level among schools and colleges of pharmacy for the promotion and improvement of pharmaceutical education and research.**
2. **To recommend investigative problems among schools and colleges of pharmacy such as: Methods of teaching, equivalence of entrance qualifications and degrees, finance, selection of students, curricula and curriculum change, entrance qualifications, student health and welfare, professional competence, academic freedom.**
3. **Participate in regional conferences on problems confronting the profession of pharmacy and especially pharmaceutical education.**
4. **To recommend and advise concerning graduate study in schools and colleges of pharmacy.**
5. **To promote mutual understanding among schools and colleges of pharmacy.**
6. **To study academic problems of member institutions and to assist them in the realization of their objectives.**

In order to achieve these purposes the Association will:

(a) **Establish an office for the accumulating of records, information and other data pertaining to the activities of the Association and to function as a liaison between the A. A. C. P. and other educational organizations and between the A. A. C. P. and other organizations in the field of pharmacy.**

(b) **Undertake investigations into institutional academic problems of pharmacy.**

(c) **Establish facilities for the distribution and exchange of laboratory materials, books and other equipment for study and research among the member colleges.**

(d) **Make provisions for the dissemination of material regarding teachers, scholarships, fellowships, summer courses, teaching seminars, staff vacancies, students, regulations affecting the profession and publications.**

It is the desire of the Committee that these suggestions will be studied by the members of the Association; the hope that the purposes and functions of the American Association of Colleges of Pharmacy may be further clarified.

A. H. Uhl, Chairman

Report of the Committee on Office of Permanent Secretary

The problem of whether or not the American Association of Colleges of Pharmacy should endeavor to provide for a full time secretary has been debated informally for sometime. It seems to many of the members that this presents the only solution to the development of a vigorous and going organization. Along with this thinking there are factors that will directly change the policies which have been followed in the past.

This preliminary report need not dwell on how the A. A. C. P. has functioned in the past. It is well known to all of you. May we but remind you that for a half century the officers have given of their time without compensation and the schools with which the various officers have been connected often furnished help in the way of personnel and materials to facilitate the work to be done.

It is proper to work toward a full time secretary with physical facilities in which the secretary can work. This involves money which, at the present time, the Association does not have. Therefore, if the Association is to arrange for this sort of an expanded program it must make arrangements for a larger budget. Just how this can be done has been informally discussed throughout the years. Some of the methods of doing this can be considered here. (1) Increase the annual dues of the member colleges. (2) Use the American Journal of Pharmaceutical Education as a medium to sell advertising. (3) Apply directly to the American Foundation for Pharmaceutical Education for financial assistance. (4) Increase the circulation of the Journal. (5) Direct contributions by the pharmaceutical industry.

Increase in the Annual Dues of the Member Colleges

In giving consideration to the question of whether or not annual dues of the member colleges should be raised as a method to increase the budget of the Association, we must keep in mind the trend on the part of university administrators to question the value of membership in the several associations affiliated with departments of the universities. The fact that the A. A. C. P. is not

an accrediting organization seems to be in its favor insofar as administration reaction is concerned. Nevertheless, the cost to a university for membership in these several associations is considerable and the American Association of Land Grant Colleges continues to study the problem.

During the fifty years of existence, the Association has increased the annual dues several times. When raises were recommended many of us said that it could not be done. It has been done, and so far as we know it has not been too much of a hardship to any one of the colleges. One appreciates that there is a limit as to how much the dues can be raised before some of the member colleges will be forced to drop out of the Association.

A study of the dues to other "health profession" organizations indicates that we are still rather modest in A. A. C. P. dues. For example, the dues of the Association of American Medical Schools is $500. On the other hand, the dues of the non-health groups are much lower. For example, the American Association of Schools and Departments of Journalism, $50; the American Society for Engineering Education, $50; the National Association of Colleges and Departments of Education, $10; the Association of American Law Schools, $85; and the American Association of Collegiate Schools of Business, $50. These data do not need to influence the procedure or determine the method by which our goal may be achieved. We must keep the situation in mind in a study of the problem.

There is no doubt but that the dues of the A. A. C. P. can be increased. Just how much is another matter and the final decision may need to be based on the activity and a projected program for the Association.

Use the American Journal of Pharmaceutical Education as a Medium to Sell Advertising

It has often been suggested that the *American Journal of Pharmaceutical Education* be used, as many journals are, as a means of financing organizations through advertising. This thought may have considerable merit; however, it would not be an easy job and may have expressed a very pessimistic attitude.

The Editor of the *Journal* has made every effort to place and keep the *Journal* on a high level and I am sure that he would not like to see the publication become merely a listing of pharmaceutical concerns, even if it could. This does not seem to be a practical approach to the problem.

Apply Directly to the American Foundation for Pharmaceutical Education for Financial Assistance

Many have expressed the sincere idea that the A. A. C. P. could and should be supported by the American Foundation for Pharmaceutical Education. No one will deny the basic fact that the functions of the schools and colleges of pharmacy are of first importance in the perpetration of the profession. Therefore, it can be expected that the parent organization should receive its just share of help. It must be pointed out that the Foundation has been and still is very liberal in its contribution to various aspects of pharmaceutical education and has many times supported associate projects. Perhaps this is the proper procedure of cooperation between the two organizations. In other words, it may be best for the Foundation to support worthwhile Association projects which cannot be handled in other ways.

Increase the Circulation of the Journal

The American Journal of Pharmaceutical Education has never been given adequate support from subscriptions. Even those of us who are greatly concerned have not subscribed or encouraged others to subscribe as we should have. It is rather obvious that we ought not expect support from outside the educational field when we do not give our fullest support. Although the above statement is factual it is not to the point we are trying to answer. The question is, "Can we through $4.00 subscriptions, raise the additional budget necessary to assure responsibility of the establishment of an office of full-time secretary?" It can help, and every effort should be made to obtain an increased circulation, but it will not do the job.

Direct Contributions from Industry

Consideration of going directly to the pharmaceutical industry for financial support for the Association has been considered. In terms of the amount of money involved it is not large when the entire industry is taken into account. The Committee believes this can be done and that a satisfactory approach to industry for long period planning could be worked out. It might well be that a program of this type would serve as an answer to our problem. Currently, so far as the Committee is concerned, it does not appear to be the proper approach.

The question of how large a budget is adequate has been given considerable thought. Assuming that the Association is interested in developing a program whereby the services of a full-time secretary is needed an annual budget of at least $50,000 should be considered.

Of the plans outlined the one that, currently at least, seems to furnish the best possibilities to increase the budget is to increase the annual dues of the member colleges. It is doubtful whether the budget could be increased adequately by this means and it may be that one or more of the other suggestions will need to be taken into consideration. The Committee will welcome other suggestions from the members.

The committee recommends that before any final commitments be made that a complete financial study be presented pertaining to the estimated cost of the proposal to this Association.

A. H. Uhl, Chairman

Report of the Committe on Personnel Problems

The Special Committee on Personal Problems recommended the publication of a roster of the teachers of pharmacy. You have heard the report of the Chairman of the Executive Committee of the Association in which it was stated that this was one of the worthwhile projects of the Association which could not be considered because of lack of funds. The Committee continues this

recommendation, when and if sufficient funds are available to publish a roster of pharmacy teachers, make it available in the proper places and keep it up to date by supplements or otherwise.

The Committee was asked to familiarize administrative officers of colleges and universities contemplating the establishment of schools or colleges of pharmacy, with the personnel situation with respect to qualified teachers in pharmacy. This has been done, when the chairman was aware of the movement. There are not available a sufficient number of properly qualified teachers to adequately staff our schools and colleges of pharmacy. As you know the American Foundation for Pharmaceutical Education is doing an admirable job in supplying funds for fellowships for qualified candidates. The Committee has no further recommendation in this regard, but expresses the hope that the Foundation will continue these fellowships and that the membership of this Association will continue to encourage promising young people to pursue graudate work and become teachers of pharmacy.

J. Allen Reese, Chairman

Report of Committee on Constitution and By-Laws

A number of proposals to change the By-Laws of the American Association of Colleges of Pharmacy were presented at the 1949 Jacksonville meeting of the Association. Since these involve changes in qualifications for membership in the Association they must be presented in writing at one meeting, sent out by mail at least four months prior to a subsequent meeting, at which time a final vote may be taken. A two-thirds majority of the member colleges voting is necessary for adoption.

The proposed changes embodied in this communication have all been presented at the Jacksonville meeting and will be *subject to a final vote at the* 1950 *Atlantic City* meeting of the Association. All the proposed changes in this communication apply to

Article I, Section 6, entitled "Curriculum and Degrees" of the present By-Laws of the Association and for your guidance and proper understanding a copy of the entire section is enclosed herewith.

Proposal A. From Dr. B. V. Christensen's report of the Committee on Constitution and By-Laws.

This proposed change is intended to permit colleges that *desire to do so* to offer a six year curriculum consisting of not less than four years of professional study and to grant a Doctor of Pharmacy degree on completion of such a curriculum. The proposals if adopted would be *permissive* in character, but *not* mandatory. The changes affect Article I, Section 6, Paragraphs (a.) and (c.), which would read as follows:

6. Curriculum and Degrees.

a. The minimum curriculum shall be of not less than four college years, regular annual sessions, of not less than thirty-two weeks each. The instruction shall be scheduled over not less than five days a week. A curriculum of six college years, regular annual sessions, which includes not less than four years of pharmaceutical professional education and training may be offered.

c The degree of Bachelor of Science (B.S.) or Bachelor of Science in Pharmacy (B.S. in Phar.), and only these degrees may be granted on completion of the four year curriculum. The degree of Doctor of Pharmacy (Phar.D.) may be granted on the completion of the six year curriculum.

Proposal B. From Dean Hayman's presidential report and approved by the Association in the form of a resolution.

This change would prohibit any college from offering both a four and a six year course except during the overlapping or transition period. It would be in the form of an added paragraph (d.) to Article I, Section 6 of the By-laws. Unless Proposal C is adopted it would apply only to those colleges that voluntarily adopt the six year curriculum. The proposed change reads as follows:

d. A college which adopts a program calling for a specified term of non-professional collegiate instruction as a minimum requirement for admission to a four year professional course shall not admit Freshmen students to a course based on lower admission requirements beginning with

the school year in which the higher requirements become effective. Students applying for advanced standing in such a college must meet the admission standards originally required of the students in the class to which admission is being sought, in addition to meeting all other requirements for advanced standing.

Proposal C. From the Committee on Curriculum. This proposed change would make *mandatory* the adoption of a program of six collegiate years consisting of two years of general and four years of professional study beginning with the fall enrollment of 1956. It would add a new paragraph to Article I, Section 6 of the By-Laws and read as follows:

c. After the fall enrollment of 1955, no students may be accepted by member colleges for enrollment in a four year curriculum leading to the degree of Bachelor of Science (B.S.) or Bachelor of Science in Pharmacy (B.S. in Phar.) and beginning with the fall enrollment of 1956, all member colleges shall require two years of collegiate instruction, comprising a minimum of 60 semester hours, or their equivalent of specified and elective subjects for admission to a professional curriculum in Pharmacy comprising four years of collegiate instruction of not less than 128 semester hours, or their equivalent.

Please study these proposed changes and compare with the present version of Section 6, a copy of which is enclosed. Be prepared to vote on the proposals at the 1950 Atlantic City Meeting.

HUGO H. SCHAEFER, Chairman

After presenting this report at the Atlantic City meeting, Dean Schaefer spoke as follows:

"That was our report. Gentlemen, since that time, there has been some criticism which has come to me regarding the wording of these proposed changes. We know it is a highly controversial subject; therefore, I am going to take the unusual procedure of moving that this report and these proposed changes in the admission requirement be tabled."

The motion to table was carried by a majority of forty. Eleven institutions voted in opposition.

It was then proposed that Section 6 of Article I of the By-laws of this Association be amended to read as follows:

6. "Curriculum and Degrees:
   a. Instruction shall be given within a period of not less than five full college years of at least thirty-two weeks each, and shall be scheduled over a minimum of five days per week."
   b. To remain as it now is, with no proposed change.
   c. "The degree of Bachelor of Science (B.S.) or Bachelor of Science in Pharmacy (B.S. in Pharm.), and these degrees only, may be given for the completion of the five-year course."
   d. "These requirements shall be effective on and after July 1, 1956."

President Christensen then read paragraph 12 in Article 1 of the By-laws which states:

"No change in qualifications for admission to membership in the Association shall be made unless the same has been presented in writing to the Association at a regular annual meeting, and to the member colleges of the Association by mail at least four months prior to the vote on its adoption. A two-thirds majority of all member colleges voting on the proposed change is necessary for adoption."

The President then stated:

"According to the Constitution and By-laws, therefore, this resolution is received, and it will take the usual course, as set fourth in the Constitution and By-laws."

Mr. Cornelius B. Kelly, Jr., world authority in the field of shellfish bacteriology, has recently been commissioned Pharmacist (R), (equivalent to the army rank of major), in the Commissioned Corps of the U.S. Public Health Service. He is a graduate of Union University, College of Pharmacy and since 1929 has been with the New York State Health Department's Division of Laboratories and Research and the New York State Conservation Department's Bureau of Marine Fisheries. He has been studying the bacteriological and chemical content of shellfish, shellfish growing waters, and sewage and industrial wastes in order to improve sanitary control methods of the shellfish industry in New York State. He has also been active in the American Public Health Association in connection with bacteriological methods and standards for shellfish. Mr. Kelly has been appointed Chief of the Shellfish Sanitation Section of the U.S. Public Health Environmental Health Center at Woods Hole, Massachusetts, where he will direct further studies in shellfish bacteriology.

The President's Page

This is my first opportunity to address myself as President of the Association directly to the members. Naturally I am desirous of having a successful year of service, one replete with constructive accomplishments and progress in our field of education. I have been given the highest office in our Association but have not accepted it as a mere honor, great though that may be. The confidence and trust which the members have demonstrated by electing me as their President can only be justified by my ability and willingness to work and serve.

Unfortunately our Association does not enjoy a sufficient income to provide an adequate office staff. Much if not most of our work is carried out by committees on a purely voluntary basis. Constructive accomplishments of the Association are largely determined by the degree of efficiency of rush committee work and I realize that the success of my administration is dependent thereon.

Accordingly, I recently addressed a personal communication to each of the committee members and chairmen, well over one hundred in number. In this letter I stressed the importance of our committees and their work. I pointed out that we had a long Association year ahead because of the shift in the convention time and much could and should be accomplished and offered my full help and advice.

I was gratified by the response as evidenced by the numerous replies which I received both from committee members and from my fellow officers. The number of such replies clearly indicated a great interest on the part of many faculty members in the work of our Association. The younger people in particular were enthusiastic in their desire to work and serve. Not all of the comments however were completely complimentary in nature. As I received these replies it became apparent that many believe there is much room for improvement in more effectively carrying on our committee activities. I am of the opinion that the balance of this "President's Page" can well be devoted to the general impressions which I thus gained concerning committee procedures.

No committee chairman or member should accept an appointment unless he is ready and willing to devote time and thought to his assignment. The chairman, at least, should know or find out what his duties are, the purpose for which his committee exists and its objectives. He should feel free to call upon the officers of the Association for advice and information relative to such questions. There should be a thorough understanding of the scope of his committee activities.

Early in the Association year each chairman should communicate with the members of his committee and ask for help and cooperation. Suggestions should be obtained for developing a committee program for the current year. In many instances the committee field is so broad that only one narrow phase of its potential scope can be properly studied and developed. Specific studies and pointed recommendations in a report are far better than broad generalities. No committee can solve all its problems in any one year but every committee should accomplish something constructive each year. The chairman of a committee should serve to lead and guide his group, he should be the directing head but he should also invite full expression of opinion from his colleagues by communicating with them frequently and thus obtaining a full exchange of thoughts and ideas. There should be no one-man committee in our Association. This only leads to a feeling of frustration on the part of his neglected committee members many of whom are young men desirous of giving expression to their thoughts and of utilizing their energy. They are willing to work if given the opportunity.

It is all important that committee work begins early in the year. Only by such an early start can the full potentialities of committee effectiveness be obtained. Too many chairmen allow the months to roll by and then find it necessary to hurriedly write a report in time for the rapidly approaching annual meeting without having given proper study to the problems involved or conferred with their committee members. I know of some instances in the past where reports were written on the morning of the day during which they were presented and I have actually heard of reports which were not written until after the meeting was over thus indicating that little or no work whatever had been done.

Our committee reports are primarily intended for publication. They are printed in our Journal so that all our members and not only those who attend the meetings may see them. Too many reports are disconnected and sketchy and are intended for reading at our meeting where they can be supplemented by spoken words. Such reports are not suitable for publication and present a real problem to the Editor. I have also been informed that some reports are so carelessly written as to require much time for editing on the part of Dr. Lyman and in some instances even a complete retyping of the material before he felt justified in sending it to the printer without casting reflections on the Association.

I therefore close with an earnest appeal to our committees. I strongly urge the chairman to begin their work at once, to communicate and confer with their committee colleagues and to come to the meeting next August with a concise, clear and constructive report properly written for immediate publication. I fully admit that in my own years of varied association work I have often been guilty of some of the above mentioned faults, but the letters which I sent out and the replies which I received have forcibly impressed me with the need for their correction. HUGO H. SCHAEFER

Important Notice

Most subscriptions to the American Journal of Pharmaceutical Education expires with the October number which completes volume XIV. If you will immediately send your check for $4.00 for the 1951 volume to Prof. Louis C. Lopf, The State University of Iowa, Iowa City, Iowa, you will save the Secretary-Treasurer's office much work and the Association the expense of sending out statements.—Ed.

A Library Opportunity

Through Dr. George Urdang, Professor Emeritus Karl Feist of the University of Göttingen has announced that it is necessary for him to sell his set of volumes of the "Archiv der Pharmacie", the most important German journal dealing with the sciences of pharmacy. The set covers the time from 1822 to 1944, i.e., more than a century, and two index volumes (1822-1857 and 1924-1937). All volumes until 1940 are bound (144 volumes). The volumes 1941-1944 are not bound. Dr. Urdang suggests that by publishing this note in the Journal we might help some school offering graduate work as well as a merited German scholar. Dr. Feist's address is: Hainholzweg 38 (20b) Göttingen, Germany.

The Editor's Page

In this issue of *The Journal* there appears a list of the graduate Fellowships that were awarded at the April and June meetings of the Board of Grants of the American Foundation for Pharmaceutical Education. The publication of this list, which may be added to as new awards are made, ought to be of great value to administrators who are seeking teachers in the near future in the various pharmaceutical fields. When the student's field of study was indicated in the minutes, that information has been included in each instance. This appears in practically all the new applications but rarely in the renewals because that information was given in the original application, a record of which the Editor does not possess.

In abstracting the record of each applicant, the Editor was impressed with the great care the Board of Grants takes in the selection of candidates for graduate study. If the student does as well in pursuing his chosen field as the Board has done in selecting him for graduate work, the profession of pharmaceutical teaching will be enriched tremendously in the years to come.

It was only yesterday, the day before these lines were penned, that the Editor heard a most amazing statement coming from a most scholarly friend, a man of the pharmacological discipline, whose reputation in his field of teaching and research is not limited by the shore lines of the United States. He said, "The trouble with pharmaceutical education is, there are too many men engaged in it that are not pharmaceutically trained." The Editor thought we were through with that sort of absurdity a long time ago but now he realizes that an absurdity, like a cat, takes a long time to die.

This incident is mentioned here for only one reason, namely, to justify the stand that we need to place greater emphasis upon the teaching of pharmaceutical history whether in connection with the individual courses in the various pharmaceutical fields or in specialized courses on both the undergraduate and graduate levels. Undoubtedly we need both.

It is a happy circumstance that in this very issue, Dr. George Urdang has written of the contribution of medical men to pharmaceutical education. Undoubtedly he could write just as informatively of the contributions to pharmaceutical education of men in other fields of activity, for example,—chemists, and biologists, and university administrators and even lawyers, and we hope he will find time in his busy days to do this very thing. As a stimulus to our thinking, the Editor is constrained to ask, who but a chemist, A. B. Prescott, (He had medical training but is thought of only as a chemist) introduced pharmacy into the state educational system? Who but a chemist, Ernest Little, interested pharmaceutical industry in pharmaceutical education and not only sired but was the obstetrition at the birth of the American Foundation for Pharmaceutical Education? Who but a chemist-educator-administrator of universities could have done what Edward C. Elliott has done in promoting pharmaceutical education by The Pharmaceutical Survey. In the early days of his career the Editor got a comprehensive vision of pharmaceutical service, not from any pharmacist, although there were many of distinction in the field, but from such administrators as President James of the University of Illinois, President Burton of the Universities of Minnesota and Michigan, and Provost Smith of the University of Pennsylvania. Finally, the most comprehensive view of pharmaceutical service ever written was stated by Newton D. Baker, a lawyer, before the American Association of Colleges of Pharmacy at the Cleveland meeting in 1922. When one reads the printed record of the service non-pharmacy men have rendered to pharmaceutical education, he feels like praying for more help from the outside to aid in the formation of a dignified program that the pharmacist himself can respect. Pharmaceutical educators were isolationists entirely too long for the good of the program.

Major Arthur H. Einbeck in his stimulating Report of the Committee on the Status of Pharmacists in the Government Service (published in this issue) has said something very much to the point when he wrote, "Organized pharmacy has made a place for pharmacists (in the government service) but pharmacists will have to show by their interest and example that they really want

the place that has been provided for them." In other words, pharmacy by having new obligations placed upon it, must assume the responsibility of filling these positions with men adequately trained and who have enough creative ability to do a job that will make the government services recognize the pharmacist's worth. We have asked for this. It will be a tragedy if we fail. This is pioneering work and the part the schools have in training men for this service deserves the attention and study of the best minds in the educational field. Undoubtedly Major Einbeck and his committee are in the best position to advise how, and what should be introduced into our educational program in order to prepare men for this field of service.

Ever since the Atlantic City meeting of the Association, the Editor has been terribly disturbed at what happened in connection with one of our colleges which has been a member through the years and has made a fine contribution to pharmaceutical education in the home state and in the nation.

As long as human beings are human beings there will be imperfections. These imperfections may occur at the most unsuspected times and in the most unsuspected places. They may occur in a college of a university long before they come to the attention of the general administration. They may occur in the faculty of a college long before they come to the attention of the dean. In the case of membership in the American Association of College of Pharmacy, which was organized for the promotion of pharmaceutical education, if an irregular act occurs in an institution, it does not promote pharmaceutical education to drop the institution from membership. The fact is, it interferes with education. It makes it more difficult to get properly qualified teachers. It discourages the student body. It humiliates the administration of a great university. It humiliates the new dean who is trying to correct the condition. It may embitter both. No institution can afford to be dropped from membership. The Association cannot afford to lose any of its members. Better send a man to talk it over with the parties concerned. Misunderstandings can be harmonized in person. They can easily be widened by correspondence. Irregularities have happened through forty years to

the writer's personal knowledge. They have been corrected without drastic action. The reader may weary of the Editor's Biblical references. When any better methods are devised by our pedagogues he will follow them. For the present he is thinking of what Christ said to the woman at the well. The record ends there but the Editor does not believe the woman continued to be a harlot.

The passing of Dr. Newcomb has left a big hole in many pharmaceutical activities and in no instance is the chasm greater than in the case of the Secretaryship of the American Foundation for Pharmaceutical Education, which position Dr. Newcomb had filled so admirably. He had both the educational and the industrial viewpoint and could integrate these viewpoints to the advantage of both education and industry. It will be hard to find his ebual to fill this position. We have, however, this consolation, that when a good man passes, always someone is found to take his place and the good work goes on with even greater speed because of the solid ground work which has been laid and the momentum which has been acquired. We Presbyterians, you know, think that principle was incorporated in the Divine plan. Fortunate it is, that Ernest Little, who knows more about the workings, the intricacies, the problems, and the objectives of the American Foundation of Pharmaceutical Education than any other living soul, has willingly assumed the work of the secretary until the position can be filled permanently. That is just what we would expect of Dr. Little. He would rise to the emergency even from a sickbed with a body full of pain. Thats a Presbyterian characteristic too.

The summer quarter has seen the passing of an unusual number of what is commonly known as "The Old Guard." For each, a memorial appears in this issue written by friends or close associates, but the Editor always has a longing to say a word about these colleagues of his, through many years of service.

Few of us had a personal contact with Mr. Ludwig Metzger, yet drug plant gardens and pharmacognosy laboratories throughout the country and far beyond its borders are the richer for his serv-

ice. It is impossible to measure a man's service by the publicity he receives. Many a quiet worker like Mr. Metzger has contributed as much to the scientific knowledge of drug plants as some men that have had a wider acquaintance.

Dean L. D. Havenhill was the most versatile of men. He had a personality that shied at publicity. He disliked administrative work, but he loved his laboratory and his teaching. He left a lasting imprint upon every student, faculty member, colleague, and citizen who was fortunate enough to pass within his sphere of action. Lovingly will he be remembered.

There was only one Edwin Leigh Newcomb. The Editor paid his respects to him in the July issue. The evaluation of Dr. Newcomb's work which was made there, belongs here. Dr. Newcomb's buoyancy was magnificent and contagious. Whether he was giving a dinner for his friends at the Traymore, or angling for a contribution for the American Foundation for Pharmaceutical Education out of a hard headed business man, he was bubbling over with enthusiasm. We are grateful for the inspiration he brought to all with whom he associated.

Likewise, there was only one Wortley Fuller Rudd, although at times he seemed to be a baker's dozen for he was here, there and everywhere. He was sincere and honest and a man of firm convictions. A typical Virginia gentleman in spirit but in manner he was a typical westerner. For that we loved him. Pharmacy owes him a debt for the service he rendered, and the service he gave to general science in the south, will stand as an enduring monument.

Our sympathy goes out in this lonesome hour to the families of those who have passed on but we will be happy with them in the knowledge that we shall meet again.

RUFUS A. LYMAN

Notes and News

University of Arizona.—Dr. W. Kilby West, M. D., is teaching the course in pharmacology this year.—William P. Langfelt who has nearly completed work for the master's degree at the University of Colorado, will give the courses in pharmaceutical chemistry.—Preston E. Palmer, University of Arizona, '50, and William Bethmann, '50, Washington State College have been added to the staff as half time instructors.

Butler University.—Eleven students were graduated at the end of the summer session in August.—The Butler Chapter of Lambda Kappa Sigma was host to the national sorority during the annual meeting in June.—New equipment valued at $2,000 has been installed in the laboratories of physiology and pharmacology.

University of Connecticut.—Twenty-nine scholarship awards have been presented to undergraduates for the current year.—The enrollment for the current year opening September totaled 265.—The following new faculty appointments have been announced: Mrs. Astrid Totten, M. A., University of Minnesota, instructor in psychology; Miss Ruth H. Foden, M.S., Purdue, instructor in physiology and pharmacology; George Totten, M.A., Yale, instructor in contemporary basic affairs.—Varro E. Tyler, B.S., University of Nebraska, has been awarded the Eli Lilly Research Fellowship.

Detroit Institute of Technology.—Dr. Martin Chanin has been added to the staff. Dr. Chanin took graduate work at the University of Michigan, has had industrial laboratory experience and has had three years of teaching in the field of organic chemistry.

Drake University.—For the third season the College of Pharmacy, in conjunction with the Des Moines Tribune, is conducting a daily pollen count for hayfever victims in the Des Moines area. The count is being made by Dean Byrl E. Benton assisted by Joe Pienta, a pharmacy major senior.—James R. Weeks, B.S. and M.S., University of Nebraska, who has nearly completed work for the doctorate at the University of Michigan, has been appointed as associate professor of pharmacognosy and pharmacology. During the war Mr. Weeks served in the Chemical Warfare Service, including two years in the Pacific theatre.—Charles B. Greenberg, B.S., South Dakota State College, M.S., University of Illinois, and a candidate for the doctorate at the latter institution, has been appointed as associate professor of pharmacy. During the war he served in the Army in North Africa, Italy, the Philippines and Japan.

Duquesne University.—Dr. V. H. Simonian, Ph.C., American Univers of Beirut, M.S., Massachusetts College of Pharmacy and Ph.D. from the University of London, has been appointed associate professor

of pharmacognosy. Dr. Simonian has been doing post-graduate work on cytogenetics at Harvard University. He was the former head of the department of pharmacognosy and director of the Royal College of Pharmacy in Bagdad for a period of three years.—Dr. Ichiso Tawji, a native Hawaiian and veteran of World War II, who holds the degrees A.B., M.S., and Ph.D., from Cornell University, has been appointed assistant professor of physiology and biochemistry.—Mr. Dan MaKagon, proprietor of the Erskine Pharmacy in East Liberty and formerly a medical representative for several years for the Abbott Company of Chicago, and more recently president of the Pittsburgh branch of the American Pharmaceutical Association, has been appointed as lecturer in pharmaceutical administration.

University of Florida.—Instructor Frank A. Buckworth has been promoted to rank of assistant professor.—The following are new additions to the faculty: Stewart W. Freyburger as instructor; Albert E. Brown, Seldon D. Fenst, and M. George Webber as interim instructors; and Thaddeus S. Grosicki as a teaching assistant.—Henry D. Johnson has been granted the university graduate felowship and Edwin D. Cockhuff is the W. S. Merrill Fellow.—Nine graduate students that have been granted American Foundation for Pharmaceutical Education Fellowships are registered for graduate work.

University of Georgia.—A program of graduate work has been implemented. The master's degree in pharmacy is being offered the current year and the degree will be awarded for the first time in 1952.—The school of pharmacy will staff jointly with the Division of General Extension, a full time assistant professor whose duties, other than teaching, will be to plan pharmacy institutes and short courses and to work closely with the Georgia Pharmaceutical Association. Frank Dobbs, a former instructor at the University, has been named to this position.—Mr. Dobbs is a graduate of the school of pharmacy, has had experience in retail pharmacy, is a former employee of the Coca Cola Company, and saw service in World War II.—Dr. Woodrow R. Byrum has been appointed professor of pharmacology. Dr. Byrum had his undergraduate work at the Medical College of Virginia and his graduate work at Ohio State University. He has had teaching experience in the University of Georgia, Ohio State, and for the last two years he has been head of the department of pharmacology at the University of Arizona where he established one of the finest equipped pharmacological laboratories in the pharmaceutical field. His research activities are prolific and he is experienced in organizing student extra-curricular activities of high order.—Messrs. Charles Hartman and Robert Styles, both Georgia graduates, have joined the staff as instructors.—Dr. Joseph P. LaRocca has been advanced to full professorship in pharmacy.—The second annual pharmacy seminar, sponsored jointly by the school and the Division of General Extension, will be held on the campus in November. The theme

of the seminar - "Drug Store Business" - with special emphasis being given to current trends in the drug field, will be of vital interest to all pharmacists in the state.

Howard College, Birmingham.—Mrs. W. W. Walker, Sr., has founded an annual grant of $3,000 in memory of the late W. W. Walker, Sr., founder of the Walker Drug Company of Birmingham. The funds are to be used to assist junior and senior students, who give promise of becoming good pharmacists, to complete their education.—A second grant is a $5,000 trust fund, the income from which is to be used to help finance a worthy junior or senior pharmacy student to complete his school training.—Miss Sarrah Norred, B.S., Howard College, M.S., University of Florida, has been appointed assistant professor of pharmacy. Miss Norred has completed all course work for the doctorate at the University of Florida.—More space has been provided for the pharmacy division. Included is a fire-proof stock room, more office space for the faculty and a room for the display and study of proprietary preparations. A telephone loud speaking system has been installed in the dispensing laboratory.—Dr. C. Lee Huyck recently addressed graduate students in dermatology at the medical school on the subject, "Pharmaceuticals Which Cause Dermatitis".

University of Illinois.—Donald Tussman, A.M., has been advanced from an assistantship to an instructorship in chemistry.—Stanley V. Susina, A.M., in pharmacology, has been appointed as instructor in pharmacy.—Dr. Conrad Blunquist, formerly a research assistant at the Urbana campus, has been appointed as instructor in zoology. —Of the 125 new students admitted in September, 67 have had one or two years of college work and 8 are holders of college degree. 403 residents of Illinois met the minimum scholastic qualifications permitting them to take the pharmacy background tests. Factors considered in the selection of students, in addition to high school and college grade point averages, were scores of the A.C.E. Psychological Test, the Iowa Placement Mathematics Test, and the Pharmacy Background Test, personal recommendation of high school teachers and drug store employers, and interviews by three members of the pharmacy faculty. Veterans received preferential consideration.—A complete revision of the four-year undergraduate curriculum is being made. The revision involves modernization of courses in the health sciences and the addition of courses in the social sciences and in business administration, which it is felt are desirable in the development of the pharmacist as a citizen. Increased emphasis also will be placed upon pharmaceutical ethics—the legal and moral responsibilities of the pharmacists. The faculty of the University's Chicago Undergraduate Division at Navy Pier will help in developing these courses.

State University of Iowa.—Eleven students were recently initiated into Rho Chi.—Mr. William B. Bass and Hugh H. Keasling have been elected to full membership in Sigma Xi, and Vishnu N. Bhatia and Myron B. Slonika to associate membership.—Twenty prizes and awards for excellence in scholarship were made at the close of the last academic year.—Frederick M. Dearborn has resigned as instructor and head pharmacist in the University hospitals to take a position with Osco Drug Company.—Walter E. Schiel, Jr., Ray I Swart, Warren H. Meyer, and Daryl L. Stamp, all graduates of the 1950 class, have been appointed to the staff of the department of drug service.

University of Kansas.—Recent appointments to the staff are as follows: Dr. Charles F. Peterson, Ph.D., Purdue, as assistant professor of pharmacy; Raymond E. Hopponen, Ph.D., University of Minnesota, as assistant professor of pharmaceutical chemistry; Desmond Gibson, M.S., University of Kansas, as instructor in pharmacy; Arthur J. Guida, B.S., St. John's University College of Pharmacy, Arthur R. Haskell, B.S., University of Kansas, and James H. Short, B.S., Stanford University, as assistant instructors in pharmacy, pharmacology, and pharmaceutical chemistry, respectively.—Dr. Robert Meyer, Ph.D., Pharmaceutical Institute of the Swiss Federal Institute of Technology in Zurich, Switzerland, is doing research in pharmaceutical chemistry as a Postdoctorate Fellow under Dr. J. H. Burckhalter.—Dr. Luther A. R. Hall and Verlin C. Stephens have been appointed as research associates in pharmaceutical chemistry for the current year—A Kansas Pharmaceutical Association Institute sponsored by the Association, the School of Pharmacy, and the Extension Department was held at the University in October.

Loyola University.—La Farmacie Francais de Louis Dufilko, which is the Historical Pharmacy Museum of the city of New Orleans and the state of Louisiana was formally dedicated on October 19. The dedication services took place at the four story building which now houses the museum at 514 Chartres Street.

University of Maryland.—Work opened with a registration of 321 students. 75 were first year students with no advanced credit and 12 had advanced credits which admitted them to the second year class. There were 66 fourth year and 30 graduate students. Of the total 70 are veterans and 34 are women.—Laboratory assistants in the various courses, all of whom have the bachelor's degree, are Joseph Anthony Kaiser, John Antian, Isador Raichlen, and Stanley Philip Kramer.— Andrew Bartilucci and Helen V. Reed are American Foundation for Pharmaceutical Education Fellows for the current year. Four students are recipients of undergraduate Foundation scholarships. The Alumni Association donated $400.00 to match the contribution made by the Foundation.—Mr. Marvin H. Goldberg has a partial scholarship from the Department of Education of the state of Maryland and Mr. Wei-Chin Lin of China is the recepient of a renewal of the Bristol Laboratories, inc.

fellowship in pharmaceutical chemistry.—The traditional orientation program was carried out under the leadership of Dr. C. W. Chapman.—Dean Foss attended the organization meeting of the U.S.P. General Revision Committee in New York City in September.—Dr. Frank J. Slama is on sabbatical leave attending some courses at Ohio State University.

University of Minnesota.—Seventy-five students were graduated at the June commencement and six in August.—Olav Braenden of Oslo, Norway, received the Ph.D. degree.—Charles E. Smythe has been advanced to the rank of assistant professor of pharmacognosy, and Dr. T. O. Soine to professor of pharmaceutical chemistry.—Dean Rogers and Drs. Netz and Hadley have addressed fourteen regional meetings of the Minnesota State Pharmaceutical Association during the past summer. The main theme of their addresses had to do with the needs of pharmaceutical education in the state and the plans the university has of satisfying them.—Mr. Robert H. Miller, assistant professor of pharmaceutical chemistry at the University of Washington, spent the summer in graduate study at Minnesota.—Fluorescent lighting fixtures have been installed throughout Wuling Hall.—Five members of the graduating class were commissioned as Second Lieutenants in the Reserve Corps of the Army Medical Service Corps and three received similar commissions in the Air Force Medical Service Corps.

University of New Mexico.—A total of 130 students are registered for the first semester. Many applicants were refused since state residents have first choice.—Useful improvements made recently include a ventilating system for the stock room and additional space for housing the materia medica collection.—During the summer Dean R. A. Bowers attended the Seminar at Ohio State University, Dr. R. W. Castle attended a meeting of the American Chemical Society in Chicago, and Dr. G. M. Hocking taught for twelve weeks as visiting professor of pharmacognosy at the University of Mississippi. He received a grant from the research fund of the University of New Mexico to carry on a project of collecting plant specimens in Mississippi and adjacent states with special attention being paid to flora used in the folk medical practices of that general area. He also presented a paper at the Plant Science Seminar held in Boston in the late summer.

University of North Carolina.—Dr. Edward Armond Brecht, Jr., a member of the faculty of the school of pharmacy since 1939, has been appointed dean of the school to succeed the late Dr. M. L. Jacobs.—Profs. E. A .Brecht, Fred Semeniuk, and Herman O. Thompson taught classes in pharmaceutical preparations, inorganic pharmaceutical chemistry, and dispensing during the summer. The average class enrollment was twenty-five.—New teaching personnel are John Andrake, Mrs. Doris B. Hawkins, and A. W. Jowdy as instructors; Howard Schaeffer and Jan H. R. Beaujon as part-time instructors; and Kenneth Hoy as teaching

assistant.—The enrollment for the fall quarter was 196 undergraduate and 12 graduate students.

University of Oklahoma.—Prof. Blanch Sommers attended the summer session at Ohio State University doing graduate work in pharmacy.—Prof. John B. Bruce recently spoke before the Tulsa branch of the American Chemical Society on the subject. "Chemistry of Some Pharmaceuticals".—Dean Ralph W. Clark presented an illustrated lecture on "The Prescription Department" at the Seminar on Pharmaceutical Administration at the Ohio State University in June.—Dr. Ralph W. Bienfang was called to Washington, D. C., in September to give his opinion before the Select Committee, the function of which is to investigate the use of chemicals in food products, H. Res. 323.—A new curriculum was put in operation on the freshman level in September.—The University of Oklahoma student branch of the A.Ph.A. was formed on June 30, under the leadership of James C. Crocker.—The Pharmacy Alumni Association is active under the leadership of Chairman Ralph Enix who is also president of the state board of pharmacy. The association is giving fine support to the university program.—An alumni directory is being prepared which will be made available to all members.—A pharmacy seminar will be held on the campus in February 1951. This back-to-school meeting will be of special importance to retail druggists. Emphasis will be placed on the problem of marketing.—The permanent and perishable equipment and supplies have been increased. Two new men with the doctorate have been added to the staff. A manufacturing laboratory has been equipped. The pharmacology laboratory is being modernized and the animal house air conditioned. New equipment included 32 new grade 'A" Torsion Balances for the prescription laboratory, 14 new analytical balances, and 34 microscopes, half of them being equipped with oil immersion lens and mechanical stages. The library has been improved and is in charge of a full-time trained librarian.

Oregon State College.—Dean George E. Crossen attended a meeting of the U.S.P. Revision Committee in New York City in September.—Prof. Fred Grill attended the Pharmacy Administration Seminar at Ohio State in June.—Sixty-seven students were graduated at the June commencement. Two of them, Kenneth Burson and Louis W. Johnson, were elected associate members in Sigma Xi.—$2,500.00 worth of gifts were received during the last academic year. Among them were many items of historical interest from druggists of the state. These have been placed in a special Oregon State College Pharmacy Museum.—Arthur K. Berman, 1907, of Corvallis, has been elected honorary president of the N.A.B.P.—Prof. Leo A. Sciuchetti and Instructor Gordon B. Stirland have received research fellowships of $1,500 each, from the American Foundation for Pharmaceutical Education.—A considerable amount of new equipment has been installed in the manufacturing and the pharmacological laboratories.

Philadelphia College of Pharmacy and Science.—The following new members of the teaching staff have been announced. Dr. Martin Barr and Robert Abrams in pharmacy; Dr. Edgar Smith and Dr. Stanley A. Tauber in physiology; Dr. Gerhardt Wendt and Cecilia McCormick in chemistry; and Mrs. Edith Robinson, nurse in the student health service. —Special provisions were made for members of the Pennsylvania National Guard and the various armed forces reserves that were called to duty or have been alerted, which prevented them from registering on schedule. They will be assured of classroom and laboratory space on their return.

University of Pittsburgh.—Dean Edward C. Reif has been named chairman of District 12 of Allegheny County for the American Red Cross First Aid Committee and as such will supervise the instruction in all first aid courses in the district.—The following staff appointments have been recently announced: Dr. Joseph A. Bianculli as associate professor of pharmaceutical chemistry; Miss Rose Goldfield, Mr. Edward S. Hudak, Miss Betty Levy, Miss Dorothy V. Monyok, and Mr. Paul J. Wurdack as lecturers in pharmacy and chemistry; and Messrs. George B. Hook and Joseph D. McEvilla as the George A. Kelly Teaching Fellows in pharmaceutical administration. The Kelly Fellowships are awarded to graduate students who intend to make the teaching of some branch of pharmacy their future vocation, and are made possible by a fund provided by Miss Eleanor P. Kelly, president of the George A. Kelly Company, wholesale druggists. Messrs. Hook and McEvilla are the first appointments made under these Fellowships.—A new program of graduate instruction is being initiated during the current year. Courses leading to the master's degree are availalbe in the fields of pharmacy, pharmacognosy and pharmaceutical administration.—A seminar sponsored by the Cambria-Somerset Pharmaceutical Association was given by the staff of the school of pharmacy at Johnstown, Pennsylvania. The seminar was held at the city of choice of the pharmacists rather than on the university campus. Members of the staff participating in the instruction were Dr. Bianculli, Claus, Sager, and Wurdack.

Purdue University.—Sixteen students who have received American Foundation for Pharmaceutical Education Fellowships, are registered at Purdue for graduate work.—Harold S. Bailey, a former Foundation fellow, has been appointed instructor in pharmacy.—Walter E. Wright, a former graduate assistant, has been awarded an XR fellowship provided by the Purdue Research Foundation.—Charles A. Walton and Clark A. Anderson, past Foundation fellows, have been appointed to the staffs of the University fo Kentucky and the College of the Ozarks, respectively. —Students who have recently completed the requirements for the doctorate are, Jean Yun-Hua King of China, who majored in pharmaceutical chemistry; Philip V. Hammond, with a major in pharmacology, who has accepted a position in physiology and pharmacology at the Houston

Branch of the University of Texas; Elvin A. Holstius and Alfred N. Martin, Jr., both majors in pharmacy, have accepted positions in the Research and Development Division of Merck and Company and Temple University, respectively; and Richard K. Mulvey who has completed work for the master's degree, has been appointed to a Purdue Research Foundation fellowship for the current year.—Robert L. Bogner, a former graduate assistant who received a Foundation fellowship, completed work for the master's during the summer session.—Julia Reyburn, M.S., has resigned as an instructor in order to take a position in the control laboratories of the Central Pharmacal Company of Seymour, Indiana.—Dean Glenn L. Jenkins was the guest speaker on the program of the Alabama Pharmaceutical Association in Birmingham in June.—Eileen Foley, M.S., '41, has been appointed Chief Pharmacist of the Memorial Hospital at South Bend, Indiana.—Dr. Charles O. Lee has returned to the University after a year's service as a visiting professor at the University of Puerto Rico.—Fifteen faculty members and graduate students attended the second national medicinal chemistry symposium of the American Chemical Society at the University of Notre Dame in June, and five attended the hospital pharmacy institute at the University of Michigan later in the month.

Rutgers University.—Dr. Morton Rodman, Ph.D., pharmacology, Georgetown University, who has had an extensive experience in hospital pharmacy in the Veterans Administration, and a tour of duty as a captain in the U.S. Army, has been appointed assistant professor of the biological sciences.—Mr. William C. Saddler, formerly assistant professor of physiology at Miami University, is a new instructor in biology.—Other new faculty members are Mr. Robert Buggeln, assistant instructor and Mr. Edwin Hack, laboratory assistant, both in chemistry.—Dr. Richard A. Deno, recently returned from a tour of France, Italy, and Spain, has assumed his duties as director of edcuational relations for the American Council on Pharmaceutical Education. He has been granted a year's leave of absence from the university.—Dr. Clarence A. Discher has been promoted to the rank of associate professor of chemistry.—Dr. Ernest Little is temporarily assuming the duties of the late Dr. E. L. Newcomb, secretary of the American Foundation for Pharmaceutical Education.—Prof. Martin S. Ulan has resigned to accept the assistant directorship of the Hackensack General Hospital. He has also been appointed secretary of the American College of Apothecaries.—Mr. Louis Kazin, former retail professional pharmacist and civic leader from Bridgeport, Connecticut, is the Pharmaceutical Extension Service Director of Rutgers University. The inauguration of the extension service affords the graduated pharmacist a complete and comprehensive field information service from which he can request advice on such items as fixture layouts, professional promotions, and scientific data. Mr. Kazin edits a monthly news letter which supplements the service by furnish-

ing all pharmacists in the state with pertinent information of both a professional and business nature.

University of Southern California.—Dr. Orville H. Miller, B.S., M.S., Ph.D., University of Washington, is a new faculty member. For some time he was associated with the U.S. Drug Administration in San Francisco as a pharmaceutical chemist and has also served as a research chemist with Consolidated Dairy Products.—Dr. Morris Wolfred attended the Plant Science Seminar in Boston in August. He is now adding new equipment and expanding space for animal work in pharmacology. He has just completed a new manual in laboratory procedures for one of the advanced classes.—Russell Bloomfield made an extensive trip during the summer through the western states and into Mexico making a study of industrial plants producing oils, soaps, and related products. —Margaret Airston attended the recent meeting of the American Chemical Society in Chicago.—The fall semester opened on September 18. The committee on admissions accepted 76 applicants who met the standards set for admission, namely, two years of sixty units of prepharmacy work in an accredited university. They will complete a four-year program in pharmacy and will be granted the doctor of pharmacy degree upon the satisfactory completion of the course and one year of recognized practical experience, in addition.

Southern College of Pharmacy, Inc.—On the evening of September 15, 1950, a banquet was given at the Atlanta Athletic Club for members of the Board of Trustees, the faculty, faculty assistants and the office staff, honoring Dr. R. C. Hood who became Dean-Emeritus and Dr. Minnie M. Meyer who has been appointed acting-dean succeeding Dean Hood.—Prof. H. C. Ward has returned as head of the department of biology after a year's leave of absence because of illness.—The following appointments to the staff have been made: Mr. W. B. Pirkle, M.A., University of Georgia, formerly a member of the history staff of the Extension Division of the University of Georgia and assistant professor of English in the Atlanta Division of the University of Georgia, was appointed as professor of English and Economics; Charles N. Taylor, B.S., Emory University, now a candidate for an M.S. at the Georgia Institute of Technology, is a new instructor in physics and bookkeeping; and George A. Hough, B.S., also from Emory University, is a new instructor in biology.—New laboratories for physics and pharmacology were equipped during the summer.—Registration for the fall quarter reached a total of 275. There are 65 freshmen and 15 special students.

University of South Carolina.—Oliver M. Littlejohn, B.S., in Pharm., "cum laude", 1949, has been awarded an American Foundation for Pharmaceuitcal Education Fellowship and is pursuing work in pharmacy at the University of Florida.

South Dakota State College.—Dean Floyd J. LeBlanc represented South Dakota State College at the R.O.T.C. Summer Camp held at Fort Sam Houston, Texas, in July, to observe the program of instruction given medical, dental, pharmacy, and veterinary students.—Guilford C. Gross, associate professor of pharmacology, has been awarded an American Foundation for Pharmaceutical Education Scholarship and will pursue work toward the doctorate degree at the University of Florida.—Donald P. Abler, M.S., 1950, in pharmacology, a World War veterans, has been adde dto the instructional staff. He will teach pharmacology and clinical methods.—Prof. W. P. Blackwell and Instructor Edgar E. Parry, spent their summer vacations actively engaged in retail pharmacy in South Dakota drug stores.—New fluorescent lighting has been installed in the practical pharmacy and dispensing laboratories; and a new hood has been installed in the drug assay laboratory. A considerable amount of manufacturing equipment has been acquired recently.—Since 1946 the number of students applying for admission to the Division of Pharmacy has been greatly in excess of that which could be accommodated. Permission was granted by the Board of Regents to limit the number of incoming freshman pharmacy students and to select these students on a scholastic basis.

St. Louis College of Pharmacy and Allied Sciences.—New members of the staff are: Robert Schleif, Ph.D., from the University of Wisconsin, to be assistant professor of pharmacy; Don G. Sheets, Ph.D., from Mississippi, to serve as assistant professor of pharmaceutical chemistry; Leon D. Prokop, M.S., University of Nebraska to be instructor in pharmacology; and three St. Louis College graduates, Anthony W. Schnelle, Frank Martin, and John Day, to be assistant instructors in chemistry, pharmacognosy, and pharmacy, respectively.—Charles C. Rabe, Jr., a former member of the staff who has been doing graduate work in pharmacy administration at the Massachusetts College of Pharmacy, received the master's degree in June and has returned to the faculty to teach in his special filed.—The faculty now numbers twenty-five, four of whom are part-time men. Two recently appointed instructors were called to active military service during the summer as were a considerable number of June graduates and lower classmen.—Dr. James R. Thayer, chairman of the department of pharmaceutical chemistry, has been appointed associate dean. He is also chairman of the newly formed faculty senate.—Frank L. Mercer, assistant professor of biology and pharmacognosy, was awarded the doctorate by the University of Washington in June. His research was done on the mosaic diseases of tobacco. Dr. Mercer presented a paper before the Plant Science Seminar in Boston in August on "Tobacco Mosaic Virus Synthesis".—New laboratories have been equipped for dispensing, microbiology, and physiology-pharmacology. A new animal room has been provided.—The industrial pharmacy laboratory has been fully equipped

with heavy machinery.—The library has been refurnished by the alumni association. Two thousand new books have been acquired and a full time assistant librarian has been added to the library staff.—Fall enrollment numbers slightly more than four hundred students, of which number, one hundred and fifty are veterans.

Temple University.—Dr. Alfred E. Livingston, Ph.D., 1914, Cornell University, and for a number of years research professor of pharmacology in the school of medicine of this university, has been made head of the department of pharmacology in the School of Pharmacy.—Dr. David E. Mann, Jr., Ph.D., Purdue, has been appointed assistant professor of physiology and pharmacology and Dr. Alfred N. Martin, Ph.D., also from Purdue, has been made assistant professor of pharmacy.—Instructor John A. Lynch has been promoted to the rank of assistant professor of pharmacy and pharmaceutical economics, and Arthur K. Lebeiknight has been advanced to an assistant professorship in bacteriology. —Twenty-seven prizes and awards have been presented to students for excellence in scholarship during the last academic year.

University of Texas.—Seventy students were graduated at the end of the summer session and two master's degrees were awarded. This was the first time any advanced degree was awarded by the 57 year old college. One of the masters, Tony Everett Jones will remain with the school as an instructor in pharmacy.—Dr. Fred Lofgren, formerly director of research at the Hast Pharmaceutical Manufacturing firm of Miami, Florida, has been appointed to the staff to replace Dr. John Boenigk who has accepted a position at the Medical College of Virginia.—Mr. Vernon Green, M. S., University of Oklahoma, has been added to the staff of the department of pharmacology.—The new $1,500,000 student health center which was opened in September houses a pharmaceutical dispensary which will still be used for teaching purposes for senior students although it will be operated under the direction of the director of the student health service instead of the college of pharmacy as was formerly the case.—Gamma Gamma chapter of Kappa Psi was reactivated during the summer.—A senior course dealing with the raw materials of pharmacy is being offered for the first time. Also a new junior course dealing with natural products used in pharmacy and medicine is being given and a new junior course in household remedies is being presented. This course is open also to all non-pharmacy students.—Approximately 500 students have registered for the fall term which is a decrease of 85 from the 1949 registration.

University of Utah.—In its first graduating class, the college of pharmacy turned out the first undergraduate student in that university with a straight A average in all his work. The student making the record was thirty-five year old Joseph S. Halgren, a native of the state. —No pharmacy courses were given during the summer.—Under the direction of Dean L. David Hiner and Dr. George E. Osborne, vast

quantities of "make-up" material was manufactured for the University's summer festival productions of "Promised Valley" and Gounod's "Faust".—Dr. Jack E. Orr attended the second Medicinal Chemistry Symposium of the American Chemical Society at the University of Notre Dame and the Pharmacy Administration Seminar at Ohio State.—During the summer a new dispensary was established in the Student Health Service Building on the campus. The dispensary in the college of pharmacy will continue to operate as a teaching adjunct.—Frederick C. Armstrong has resigned his position as a graduate teaching fellow to accept an instructorship in pharmacognosy at the University of Colorado.—Dr. Swinyard was a guest lecturer during the summer in a course entitled "The Alcohol Problem and Education" which was taught in the Educational Administration Department. He discussed the drugs used in the treatment of alcoholism.—The Graduate Council has approved a petition of the college of pharmacy which set up courses at the graduate level which will lead to graduate degrees in pharmacy. The plan will make maximum use of related departments in both major and minor curricula. —A total of 223 students registered for the fall semester.

Medical College of Virginia.—The registration at the beginning of the year totaled 226 in all classes.—During the summer months one research laboratory has been completely equipped and the chemistry, pharmacy and dispensing laboratories have been remodeled and supplied with additional equipment.—Dr. W. S. Benica has resigned from the faculty in order to reenter the field of industrial pharmacy.—Dr. Albert W. Mattocks, director of the American Pharmaceutical Association Laboratory, was the guest speaker at the annual banquet which is sponsored jointly by the Mortar and Pestle Club and Rho Chi. Awards were made for high scholarship during the last academic year.—Dr. M. L. Neuroth and Mr. R. H. Fiske attended the seminar on pharmaceutical administration held at the Ohio State University in June.

State College of Washington.—Mrs. Marjorie Cummins Johnson, B.S., in pharmacy, 1946, University of Washington, has joined the staff as instructor in pharmacy. Since graduation Mrs. Johnson has been employed in her father's store in Columbus.

University of Washington.—Mr. Richard Kerr has been made a part time associate of the faculty, his principal responsibility being the nurses pharmacy courses.—Dr. E. M. Plein has been elected secretary of Sigma Xi.—Dr. Lewis Fisher is director of the campus community chest drive.—Drs. Heber Youngken, Jr., Fisher and Plein are new members of the U.S.P. Revision Committee.—Dr. Youngken spent the summer studying at several universities in England and in France. On his return he spoke before the Plant Science Seminar in Boston.—A new laboratory for the study of cosmetics is being prepared. Additional classrooms are also being made available in Bagley Hall in space formerly occupied by the school of dentistry.

University of Wisconsin.—Twenty-seven new graduate students have enrolled in pharmacy since last June, making a total of 50 engaged in advanced work. Additional courses and equipment have been made available.—A get-acquainted picnic for pharmacy graduate students when the fall session opened was the first step toward establishing a close-knit group.—Dean Arthur H. Uhl has been appointed an examiner for advanced degrees for the University of Benares (India).—Dr. Takeru Higuchi has received a promotion to an associate professorship.—Drs. Lloyd M. Parks and Melvin W. Green have each been named to membership on three U.S.P. subcommittees, with Dr. Green holding a chairmanship and thereby becoming a member of the U.S.P. executive committee. Drs. Park and Green attended the organizational meeting of the Revision Committee in September, where Dr. Green presented a paper on "Some Principles of Drug Standardization".—Dr. George Urdang has returned from a two-month trip to Europe, where he presented a paper at the Sixth International Congress for the History of Science and attended several other historical and professional meetings. At the meeting of the Gesellschaft fur Geschichte der Pharmazie, Dr. Urdang was awarded the Gunther Schmid Medal for his historical work on Goethe and his relations with pharmacy.—The School of Pharmacy has established a Kremers Memorial Lecture, honoring the former dean and educational leader. Dr. George D. Beal of the Mellon Institute was selected to give the inaugural lecture on November 2, which was followed by a dinner honoring the memory of Kremers.—That same week the school held a one-day institute for practicing pharmacists (devoted to ophthalmic preparations and pharmaceutical economics), and on Homecoming Saturday held "open house" for both pharmacists and the public. —The series of papers on history of pharmacy presented at the first Pharmacy Teacher's Seminar by Dr. Urdang and Mr. Sonnedecker, have been reprinted in booklet form under the title "Teaching History of Pharmacy". Copies are available upon request.

University of Wyoming.—Two freshmen and nine upper-class students of pharmacy received the distinction of being placed on the all-university Honor Roll for the spring quarter of 1949-50.—A complete vacuum system has been installed in all the pharmaceutical laboratories. —During the first week of August, the Mycological Society of America held its annual meeting at the University of Wyoming Science Camp in the Snowy Range Mountains, thirty-five miles west of of Laramie. Dr. W. G. Solheim, professor of botany, was in charge of arrangements for the meeting.—Two pharmacy students were awarded the bachelor's degree at the summer session commencement.—Kenneth Hoy, a recent graduate, has been appointed a teaching assistant in the school of pharmacy of the University of North Carolina.—Dean David W. O'Day attended the national meeting of the American Chemical Society and the chemical exposition held in Chicago in September. Dean O'Day is

president-elect of the Wyoming section of the society.—Profs. Raymond Kahl and Bone did graduate work at the University of Washington during the summer.—Dean O'Day, upon an invitation extended by President Al Fryer of the Wyoming Pharmaceutical Association, discussed "Advances in Pharmacy" before the Commercial Club and the Rotary Club of Powell and the Rotary Club of Cody in September.—Dr. Theodore King, of the department of pharmacology, carried on studies in the laboratories of Dr. Theodore Koppanyi at the Georgetown University Medical Scchool at Washington, D. C., during the summer.—Miss Ramona E. Parkinson, formerly of the pharmacy staff at the University of Colorado, has been appointed as supply assistant professor of pharmacy to replace Prof. Jack H. Bone who is on leave the current year taking advanced work at the University of Washington.—Mr. Andrew Lang of Sheridan, Wyoming and Theodore L. Hoy of Cheyenne are employed as part-time instructors in pharmacy.

Korean Library Needs Books

Through Dr. George L. Webster of the University of Illinois the attention of colleges of pharmacy and the entire pharmaceutical profession is called to the need for books on pharmaceutical and medical subjects to rehabilitate the libraries of Severance Medical School and Hospital and Ewa College of Seoul and of Chosen Christian College of Chosen, Korea. These institutions were 65% destroyed by war damage and are looking forward to a merger of their efforts with the restoration of peace time activities. Contributions of books may be sent to Severance Library Fund, c/o James Palmgren, Wesley Foundation, St. Paul's Methodist Church, 1605 W. Harrison St., Chicago 12, Illinois.

A Committee on Pesticides has recently been established at the headquarters of the America Medical Association to study the health problems associated with the use of pesticides (insecticides, rodentcides, fungicides, herbicides and similar types of economic poisons). As a part of its study on the safety and effectiveness of these chemicals, the Committee is undertaking an intensive educational program to assist physicians and other health practitioners in recognizing and overcoming the difficulties which certain of the newer compounds present. The first of a series of Committee reports on the medical aspects of pesticides has been published in the Journal of the American Medical Association. A reprint of this report, entitled, "The Pharmacology and Toxicology of Certain Organic Phosphorous Insecticides" is available and may be obtained by addressing Bernard E. Conley, Secretary of the Committee on Pesticides of the Council on Pharmacy and Chemistry of the American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

Miscellaneous Items of Interest

Memorials

LUDWIG METZGER

Death came untimely to Mr. Ludwig Metzger, Superintendent of the Medicinal Plant Gardens, College of Pharmacy, University of Washington, on the morning of September 18th. Mr. Metzger who enjoyed the high esteem of faculty and students alike passed away following a brief illness at the age of 67. He had been associated with the University and College staff for more than twenty-eight years and was internationally known for the many contributions made during that time toward drug plant cultivation, seed collections and plant exchanges with various universities and gardens throughout the world. It was largely through Mr. Metzger's enthusiasm and zealous efforts that the drug gardens at the University of Washington reached such renowned fame.

Mr. Metzger was born on May 28, 1883, in Baden, Germany. He came to the United States and Seattle, Washington in 1905 and joined the University staff in November, 1922. In 1949 he was made an honorary member of the Agricultural Commission of the Haiti government for help and information he had given them in the past few years.

Mr. Metzger also was a past grand (president) of Anchor Lodge, Independent Order of Odd Fellows, and a member of Zion American Lutheran Church. He lived at 6521-32 Ave. N. E.

Survivors include his wife, Lorena; two daughters, Mrs. Leta Hunt, Seattle and Mrs. Telma Heuchert, Dubuque, Ia., and a granddaughter.

— **Heber W. Youngken, Jr.**

L. D. HAVENHILL

Few people who knew Dean Emeritus L. D. Havenhill had any conception of the scope of his interests and the breadth of his knowledge. A few days before he embarked upon new field of endeavor April 29, 1950, at the age of 80, he remarked to me that life is so short one cannot accomplish many of the things he would like to do. This from a man who had been a farmer, a pharmacist, an educator, a coffin and casket trimmer, analytical chemist, assayer of ores, a sugar chemist, agricultural chemist, food and drug chemist, member of an orchestra, librarian, botanist, photographer (including microphotography), cabinet maker and woodworker, a skilled appraiser of antiques, a collector of glass, mortars, and china, and historical books in pharmacy and chemistry.

L. D. Havenhill was born on a farm in Kendall County, Illinois and finished high school in Aurora, Illinois. He received the degree of Ph.C. from the University of Michigan in 1893 and Ph.M. in 1894. In 1903 he received the B.S. degree from the University of Kansas and in 1940 the University of Michigan conferred an honorary M.S. degree upon him.

He was a member of Sigma Xi; a member of the A.Ph.A., and former vice president; a member of the Committee on Recipe Book of the A.Ph.A.; president of the Amer. Assoc. of Colleges of Pharmacy in 1933; member of the tenth and eleventh Revision Committees for the U.S.P.; honorary member and librarian of the Kansas Pharmaceutical Association; member of the American Chemical Society (past president of the Kansas City section); life member of the Kansas Academy of Science (v-pres. '16, pres. '18, treas. '20), member of the Advisory Committee on Livestock Remedies for the Kansas State Board of Agriculture, and of Phi Delta Chi, pharmacy fraternity.

Dean Havenhill was one of the kindest and gentlest of men; extremely modest, completely unselfish, unaffected, and devoted to his family, his friends, and the University of Kansas which he served for almost fifty years.

He showed by example rather than lip service the real meaning of a broad knowledge and interest in pharmaceutical education. Pharmacy has lost in his passing a strong figure, but his work is immortalized wherever the men and women who came under his direction are practicing pharmacy today in the Havenhill tradition.

—J. Allen Reese.

EDWIN LEIGH NEWCOMB

On September 2, 1950, pharmacy lost one of its most efficient and respected leaders, Dr. Edwin Leigh Newcomb.

Dr. Newcomb was born in Vineland, New Jersey on October 18, 1882, the state in which he resided at the time of his death.

He was a graduate of the Philadelphia College of Pharmacy and Science where he served as instructor in Botany and Pharmacognosy for five years following his graduation. He pursued graduate study at the University of Pennsylvania, and was later awarded the honorary degree of Doctor of Pharmacy by the University of Pittsburgh.

It would be impossible to evaluate adequately Dr. Newcomb's activities and accomplishments in the field of Pharmacy in this statement. They are too numerous and too profound. A few of the more important ones are here presented and briefly commented upon.

While serving as Professor of Botany and Pharmacognosy at the University of Minnesota, he was engaged in many additional pharmaceutical activities. He was the originator and director of the University's

medicinal plant garden which has established a nation-wide reputation. He was editor of "Minnesota Medicine" of "The Northwestern Druggist" and served as Secretary and as President of the Minnesota Pharmaceutical Association.

He was appointed Secretary of the National Wholesale Druggists' Association in 1927 and was serving as Executive Vice-President of that Association at the time of his death.

Dr. Newcomb was one of the founders, perhaps the originator of the Plant Science Seminar, which he continuously supported and developed to its present state of usefulness.

He was closely associated with the American Foundation for Pharmaceutical Education during its formative years and has served as its Secretary since its organization in 1942. The Foundation was one of Dr. Newcomb's major interests and provided one of his most important activities. He was largely responsible for the collection of funds running into millions of dollars, which are being wisely expended in behalf of pharmaceutical education in this country.

He was more recently associated with the Health Information Foundation and served as the Chairman of its Finance Committee at the time of his death.

Dr. Newcomb was Secretary of the Druggists' Research Bureau and was currently engaged in a study of retail pharmacy operational costs.

He was author and editor of texts and scientific articles in his field of botany and pharmacognosy.

He was designated as the 1950 recipient of the Remington Medal, given in recognition of his outstanding contributions to the profession of pharmacy.

He was a long time member of the United States Pharmacopoeial and National Formulary Revision Committees. His work in connection with the standardization of botanical drugs, in these connections, is known to everyone in the field of pharmacy.

From these sketchy and inadequate considerations, it becomes clearly apparent that in the passing of Edwin L. Newcomb, pharmacy has lost one of its most ardent and tireless workers. But more than that, we, its practitioners in all its various fields, have lost a cordial, friendly co-worker who was respected by all, and loved by those more closely associated with him.

Dr. Newcomb spared himself little, which is one of the reasons why his contributions were many and profound, and why he will be remembered as one of pharmacy's really great men. He was at heart an educator, and the field of pharmaceutical education is richer as a result of his having been with us.

—Ernest Little.

WORTLEY FULLER RUDD

Wortley Fuller Rudd, Ph.B., M.A., Sc.D., L.H.D., Dean Emeritus of the School of Pharmacy of the Medical College of Virginia, died at Richmond, Virginia, on July 26, 1950, after an illness of several weeks. Dean Rudd had been in declining health for some months. Funeral Services were held at the graveside in Maury Cemetery at Richmond.

Dean Rudd was born at Skinquarter in Chesterfield County, Virginia, on October 6, 1876, the son of the late Alfred A. and Indie Cauthorne Rudd. There he received his early education, moving on later to the University of Richmond, which awarded him the A.B. degree in 1898.

Following a period of high school teaching at Brookneal Institute and in the public schools of Manchester and Richmond, Dean Rudd entered the Medical College of Virginia and received the Bachelor of Pharmacy degree in 1902.

From the day he entered the Medical College of Virginia, where as a student he was named quiz master in chemistry, Dean Rudd's life was dedicated to the College, its schools and above all, it students. Seldom does a man give himself to a cause to the extent to which Dean Rudd gave himself to education—and particularly, but not exclusively—to pharmaceutical education.

During his early years of college teaching, he attended summer sessions at Columbia University, which made him a Master of Arts in chemistry in 1911. From that time Dean Rudd devoted himself to the years of hard word required to mature, season and bring to full flower the talents of even the most gifted men. For years he taught with little assistance all of the chemistry given in the schools of medicine, dentistry, pharmacy and nursing. His appointment as Instructor in Pharmacy came in 1906, as Professor of Chemistry in 1910.

Following the amalgamation of the University College of Medicine and the Medical College of Virginia, when the eminent Dr. Stuart McGuire served as President of the College, Dean Rudd served unofficially as one of Dr. McGuire's administrative assistants. In 1920 he succeeded Albert Bolenbaugh as Dean of the School of Pharmacy, which post he held until his retirement on July 1, 1947.

During his period of service, Dean Rudd's interests were wide and varied, and the recognition which came to him testifies to his effectiveness in the organizations to which he gave his efforts. He served as president of the American Association of Colleges of Pharmacy, the Southern Association of Science and Industry, the Virginia Academy of Science and the Virginia Section of the American Chemical Society. He also served on the governing boards of the Richmond Professional Institute of the College of William and Mary and the Virginia State Chamber of Commerce. For many years he stood high in the councils of the American Pharmaceutical Association.

His work in creating and his term as president of the Southern Association of Science and Industry gave impetus in its beginning to an organization now grown strong in its task of bringing about closer coordiation between Southern educators, scientists and industrialists. His term as head of the Virginia Section of the American Chemical Society brought new vigor which the Section has never lost. His presidency of the Virginia Academy of Science was prosecuted with such effectiveness that in 1941 he was named Virginia's man of the year in Science. His service as president of the American Association of Colleges of Pharmacy advanced appreciably the continuing task of raising the standards of pharmaceutical education. Ample evidence is the citation which accompanied the honorary doctorate of science conferred upon him by the University of Maryland in 1941, which praised him for "doing as much, if not more, than any one person as teacher, writer, editor and association worker, to advance the standards of pharmaceutical education, to elevate the practice of pharmacy and to enlist the support of pharmacists for the advancement of science in general."

His contributions were also recognized by the University of Tampa, which conferred upon him an honorary doctorate of humane letters, and by the Medical College of Virginia, which conferred upon him his second honorary doctorate of science. One of his most cherished possessions was the Herty Medal, awarded him by the Georgia Section of the American Chemical Society for his outstanding contributions to chemistry in the Southeast.

This partial recitation of his achievements tells but little of the man who taught and was loved and respected by several generations of students for his high character and personal traits. Few know the many students who are today successful practitioners of medicine, dentistry and pharmacy because Dean Rudd held out a helping hand when financial or academic problems seemed too difficult to overcome. Few were given the opportunity to know how really close to his heart lay the interests of his students. More than once he was forced by his sense of duty to present an unyielding front to recalcitrant students, and then to sit in his office with tears in his eyes because his boys had let him down.

Never known as an easy teacher, Dean Rudd has a positive dislike and intolerance for laziness. He would work at length with any student who tried to do his best, but any evidence of slothfulness or indifference brought forth a wrath which was apt to be both blistering and long remembered.

In his many affairs, Dean Rudd never faiaied to work to his limit for what he deemed to be right, and he fought with all the powers at his command anything he believed to be wrong. At times these positive characteristics brought him into bitter conflict with some of his closest friends, but his powerful convictions allowed him no other course. Even

his strongest opponents never challenged his dedication to the ideals which he sought to uphold.

Many had the delightful experience of being guests in the home which he made with his beloved wife, the former Kate P. Vaden, who survives him. Here they welcomed their friends, young and old, and it was an unusual evening which did not find them entertaining informally those who dropped in at 1614 Park Avenue. Those who knew the warmth of his friendship and hospitality will not forget him.

In Dean Rudd, God created a man. May He in His wisdom see fit to give Pharmacy more who are like him.

—R. Blackwell Smith, Jr.

Allocation of American Foundation for Pharmaceutical Education Fellowships Made by the Board of Grants at Meetings Held On April 25, and June 21 and 24, 1950

The minutes of the three meetings were sent by Secretary E. L. Newcomb under date of August 4, 1950, with the suggestion that the abstracts of the minutes and the names of the recipients of fellowships be printed in **The Journal.**

The amount of the stipends are not given but they vary between $1200 and $1500 for one full year of twelve months work, plus allocations of up to $500 to cover tuition and other required college expenses where the student does not receive G.I. benefits or is serving as a teaching assistant and does not have to pay such expenses.

In listing, only the student's name is given, followed by the undergraduate and graduate degrees he had obtained before making his application. This is done to indicate the extent of the applicant's previous training and the school or schools previously attended. Then follows the major field of the applicant's study, if it was indicated in the Secretary's report.

Lastly, the name of the institution is given in which the student will study his special field, if this is shown in the report.

Awards Made at the April 25, 1950 Meeting in Washington, D. C.

Extracts from the minutes of this meeting were printed in the July 1950 issue of **The Journal**, page 523. The fellowship awards made at

this meeting were either to new applicants or renewals and became effective with the summer session of 1950. The awards follow.

John Andrako, B.S., M.S., Rutgers. University of Wisconsin.

Harold James Antonides, B.S., Butler University, M.S., Purdue. Purdue University.

William Sheldon Apple, B.S., University of Wisconsin. Major field, pharmaceutical administration. University of Wisconsin.

John F. Bester, B.S., Saskatchewan. Major field, pharmacology. Ohio State.

Martin I. Blake, B.S., Brooklyn College of Pharmacy. Ohio State.

Robert Leonard Bogner, B.S., M.S., St. Louis College of Pharmacy. Purdue.

Eunice R. Borrow, B.S., M.S., Wisconsin. University of Wisconsin.

Theodore Meyer Brody, B.S., Rutgers, M.S., University of Illinois.

Walter Francis Charnicki, B.S., M.S., Massachusetts College of Pharmacy. Purdue.

Lamar B. Dale, B.S., University of Florida. Major field, pharmacology. University of Florida.

Calvin M. Foltz, B.S., M.S., Philadelphia College of Pharmacy and Science. Major, pharmaceutical chemistry. Purdue.

Leon I. Goldberg, B.S., School of Pharmacy, Medical College of the State of South Carolina. Medical College, South Carolina.

Charles Henry Sprague, A.B., B.S. Pharm., Creighton University, M.S., Purdue, Purdue University.

Floyd P. Hallett, B.S., Wisconsin. University of Wisconsin.

Eugene R. Jolly, B.S., Wisconsin. Major, pharmacology. University of Wisconsin.

Raymond H. Kohl, B.S., M.S., Colorado. University of Washington.

Muriel R. Loran, B.S., Brooklyn, M.S., Philadelphia College of Pharmacy. Ohio State.

Myron W. McKinney, B.S., Purdue, M.S., Western Reserve. Purdue University.

Thomas W. Schwarz, A.B., B.S., M.S., California. University of California.

Jos. E. Sinsheimer, B.S., M.S., Michigan. Major, pharmaceutical chemistry. University of Michigan.

Glenn Sonnedecker, B.S., Ohio State. University of Wisconsin.

Verlin C. Stephens, B.S., U.S.A.C. University of Kansas.

Edward V. Svedres, B.S., M.S., Massachusetts College of Pharmacy. Purdue University.

Donald A. Tuck, B.S., University of Alberta. Citizenship application filed. University of Wisconsin.

H. Abu-Shady, (foreign, Egypt), B.S., University of Cairo, University of Minnesota.

Ludmila Kregiel, (foreign, Beirut), Ph.C., Beirut, M.S., Philadelphia College of Pharmacy. University of Maryland.

The June 21, 1950, Meeting of the Board of Grants was held in New York City.

At this meeting the Secretary brought to the attention of the Board of Grants a discussion by the Directors of the Foundation at their Annual Meeting relating to proposals that Fellowship awards for graduate work be made, not on a continuing basis of three full years but that they be held as loan funds and that recipients be requested to agree to return the amount granted to the student as soon as possible after completing his graduate work. Several alternative plans of procedure were discussed but no action taken.

The following domestic Fellowship renewals were approved, most of them to become effective September 1, 1950.

Andrew Barlilucci, M.S., Rutgers. Major field, pharmaceutical chemistry. University of Maryland.

Patrick F. Belcastro. Major field, pharmacy. Purdue University.

Willard C. Fuller. Major field, pharmacology. State College of Washington.

Ernest W. Grant. Major field, pharmaceutical chemistry. Purdue.

Edwin R. Hammarlund. Major field, pharmaceutical chemistry. University of Washington.

Jacob S. Hanker. Major field, pharmaceutical chemistry. University of Maryland.

Harold F. Hardman. Major in pharmacognosy and pharmacology, University of Illinois.

Francis W. Hughes, major in pharmacology. Temple University.

Hastings H. Hutchins, major in pharmaceutical chemistry. Purdue.

Jeffie G. R. Langston, major in pharmaceutical chemistry. University of Maryland.

August P. Leinberger, major in pharmacology. University of Wisconsin.

Robert M. Leonard, major in pharmacognosy. University of Minnesota.

John W. Martin, Jr., major in pharmaceutical chemistry. University of North Carolina.

Robert J. McIsaac, major in pharmacology. University of Buffalo.

Joe Bert Nash, major in pharmacology. University of Texas.

William L. Nobles, major in pharmaceutical chemistry. University of Kansas.

Albert L. Picchioni, major in pharmacology. Purdue.

Ivan W. Rowland, major in pharmacy. University of Washington.

Robert H. Schleif. University of Wisconsin.

Charles S. Shull, major in pharmaceutical chemistry, University of Kansas.

Myron B. Slonika, major in pharmacology. State University of Iowa.

Gail Stapleton, major in pharmaceutical chemistry. State College of Washington.

Aristotle J. Vazakes, major in pharmaceutical chemistry. Purdue.

John G. Wagner, major in pharmaceutical chemistry. Ohio State University.

Byron B. Williams, major in pharmacology. University of Florida.

James G. Young, major in pharmaceutical chemistry. University of North Carolina.

Thomas W. Schwarz. University of California.

Ross McPherson Baxter, major in pharmaceutical chemistry. University of Florida.

The following foreign Fellowships were renewed.

Pierre E. Carlo. University of California.

Mr. Tin-Ru Chu. New York College of Pharmacy.

Mr. Yen-Tsai Chang, major in pharmaceutical chemistry. University of North Carolina.

G. G. Krishna Murty, major in organic chemistry. University of Minnesota.

V. H. Simonian, major in pharmacognosy. Massachusetts College of pharmacy.

Mr. Su-Ming Wang, major in pharmaceutical chemistry. State College of Washington.

The following **new** domestic awards were made.

Jack Lewis Beal, major in pharmacognosy. Ohio State University.

Albert E. Buckpitt, major in pharmaceutical chemistry. University of Wisconsin.

Benjamin F. Cooper, major in pharmacy. University of North Carolina.

James M. Crampton, major in pharmacology. University of Florida.

Fred C. Drommond, major in pharmacy. Purdue.

Durwood N. Entreken, major in pharmacy. University of Florida.

At the June 24, 1950, meeting of the Board of Grants in New York City the following Fellowship renewals were granted.

Stanley Bauer, major in pharmacology. Syracuse University.

Wanda J. Butler, major in pharmacy. State University of Iowa.

Nicholsa G. Bolos, major in hospital pharmacy. Philadelphia College of Pharmacy and Science.

Clarence F. Carver, major in hospital pharmacy. Philadelphia College of Pharmacy and Science.

B. K. Mehra (foreign). Three months at Purdue University and nine at the Philadelphia College of Pharmacy and Science.

Jack T. Bryan. University of Florida.

The following **new** domestic Fellowships were approved.

Joseph A. Feldman, major in pharmacy—pharmaceutical chemistry. University of Wisconsin.

Guilford C. Gross, major in pharmacology. University of Florida.

Robert Lee Hull, major in pharmaceutical chemistry. University of Wisconsin.

Marcus W. Jordin, major in pharmacology. Purdue University.

Paul E. Kampfe, major in pharmaceutical chemistry. University of Wisconsin.

John Katz, Jr., major in pharmacognosy. University of Wisconsin.

Donald C. Kroeger, major in pharmacology. Purdue University.

Oliver M. Littlejohn, major in pharmacy. University of Florida.

Arthur H. Martin, major in pharmaceutical chemistry. University of Buffalo.

Howard McClain, Jr., major in pharmacology. University of Wisconsin.

Warren E. McConnell, major in pharmacy. Purdue.

Willis R. Moore, major in pharmaceutical chemistry. Ohio State.

Lester L. Nisonge, major in pharmaceutical chemistry. University of Wisconsin.

Thomas T. Nitta, major in pharmacology. University of Washington.

John E. Preston, major in pharmaceutical chemistry. University of California.

Helen V. Reed, major in hospital pharmacy. Fellowship to be granted when applicant decides on institution she desires to attend and has been accepted by graduate school.

Leo J. Schermeister, major in pharmacognosy. University of Illinois.

Leo A. Schiuchetti, major in pharmacognosy. University of Washington.

Edward L. Schmidt, Jr., major in hospital pharmacy. University of Florida.

Louis R. Sinotte, major in pharmaceutical chemistry. Purdue.

Gordon B. Stirland, major in pharmacy. Oregon State College.

John B. Ward, major in pharmacy. Purdue.

Leonard R. Worthen, major in bacteriology. Temple University.

At the three meeting of the Board of Grants, there were sixty applications for Fellows'.ips that were not awarded. This was due to the fact that some of the applicants had withdrawn because they had accepted teaching positions; some did not meet the scholarship standards; some did not have their applications entirely complete and in proper form; and in the case of foreign students, the funds allocated for Fellowships for the current year were entirely exhausted. For example, at the June 24, meeting thirteen applications from foreign students were considered but none were awarded because of the limitations of funds for foreign students. In most of these cases final action was deferred for one year.—Editor.

The Twenty-Seventh Annual Plant Science Seminar

The 27th Annual Plant Science Seminar was held at the Massachusetts College of Pharmacy in Boston from August 24th through August 30th, 1950. One hundred and five persons participated in one or more of the sessions and twenty-three colleges of pharmacy were represented. In keeping with the tradition of the Seminar the newcomers were offered a warm welcome and were initiated into a week's program that combined scientific reports, botanizing excursions, trips to research institutions, friendly discussions, and social events that excluded no one.

Outstanding on the Seminar program were trips to: the Harvard University experimental plots and the Arnold Arboretum where Dr. Karl Sax, director, personally conducted the tour and explained how new varieties of fruit trees and vegetable plants are being developed; the Medicinal Plant Garden of the Massachusetts College of Pharmacy where Dr. Heber W. Youngken, Sr., indicated the numerous plants which yield medicinal agents; the Division of Biological Laboratories, Public Health Department of the Commonwealth of Massachusetts, one of the few state laboratories licensed to manufacture antitoxins, serums, vaccines and other biological products; the Harvard University museums which include the world-famous Ware collection of glass models of flowers and plants; and the Waltham Field Station of the University of Massachusetts which is maintained for research in vegetable gardening, floriculture, murseryculture, and fruit growing.

Invited speakers as well as the Seminar members presented 17 scientific papers, the scope of which was quite varied and ranged from teaching methods to "steroids in Plants" and "Phase Microscope". A full day of botanizing and collecting plant specimens was enjoyed at the Stow Country Club grounds. The Seminarians also enjoyed a number of social activities: box luncheons served out-of-doors; luncheons sponsored by the Massachusetts College of Pharmacy and by various drug concerns; a watermelon party given by the founder of the Seminar, the late Dr. E. L. Newcomb; and the annual banquet on the last evening followed by an illustrated lecture: "The Upjohn-Penick Expedition in Africa", by Mr. Edson F. Woodward, pharmacognosist at the S. B. Penick and Company.

At the final business session a resolution was unanimously adopted offering the services of the Plant Science Seminar to the executive committee of the American Association of Colleges of Pharmacy in formulating the program for a teaching seminar in the biological sciences in the event that such an activity is decided upon by the executive committee. It was also voted that the Seminar revert to its

original meeting time—one week before the August meeting of the A.A.C.P. - A.Ph.A. combined conventions.

The officers elected to serve during 1950-1951 are:

Chairman—Heber W. Youngken, Jr., University of Washington College of Pharmacy.

1st Vice-Chairman—Paul D. Carpenter, University of Illinois College of Pharmacy.

2nd Vice-Chairman—Carl H. Johnson, University of Florida College of Pharmacy.

Secretary-Treasurer—Edward P. Claus, University of Pittsburgh School of Pharmacy.

Members of the Executive Committee—
Elmer L. Hammond, University of Mississippi School of Pharmacy,
J. Allen Reese, University of Kansas School of Pharmacy.
Chairman Youngken,
Secretary-Treasurer Claus.

Among the registrants were persons from the Phillippine Islands, Canada, Florida, California, New Mexico, and Washington. In addition, the president of the Japanese Pharmaceutical Association attended the latter part of the Seminar and extended the greetings from his organization.

The 23 colleges of pharmacy represented were:

Albany College of Pharmacy, Albany, N. Y.
College of the Ozarks, Clarksville, Arkansas.
Duquesne University, Pittsburgh, Pa.
Massahusetts College of Pharmacy, Boston, Mass.
Medical College of South Carolina, Charleston, S. C.
New England College of Pharmacy, Boston, Mass.
Purdue University, W. Lafayette, Ind.
Rhode Island College of Pharmacy and Allied Sciences, Providence, R. I.
St. Louis College of Pharmacy, St. Louis, Mo.
Temple University, Philadelphia, Pa.
University of Connecticutt, New Haven, Conn.
University of Florida, Gainesville, Fla.
University of Kansas City, Kansas City, Mo.
University of Mississippi, Oxford, Miss.
University of New Mexico, Albuquerque, N. M.
University of the Philippines, Quezon City, P. I.
University of Pittsburgh, Pittsburgh, Pa.
University of South Carolina, Columbia, S. C.
University of Southern California, Los Angeles, Cal.
University of Wisconsin, Madison, Wis.
Washington State College, Pullman, Wash.
Wayne University, Detroit, Mich.
Xavier University, New Orleans, La.

—**Edward P. Claus,** Secretary-Treasurer.

The Seminar In Pharmacy Administration

The Seminar in Pharmacy Administration held on the campus of The Ohio State University was an unqualified success. Representatives from thirty-five colleges of pharmacy and a total of seventy delegates were enrolled during the course of the Seminar.

The quality of instruction was of a high order throughout. It was apparent that every member of the instructional staff had given careful thought to the preparation of subject matter and the presentations were especially well done. Much of the material that was presented in these discussions is not available from any other sources. All registrants were keenly interested and expressed the opinion that they were more than fully repaid for the time and effort and expense incurred in attending these sessions.

Every instructor was requested to prepare a rather complete abstract of the subject matter that was presented, and this has been mimeographed and will be bound in two volumes for distribution as follows: Two copies to be sent to every college of pharmacy—one to be placed in the library and the other copy to be used by the head of pharmacy administration; a copy to every person enrolled in the Seminar; a copy to every member of the American Council on Pharmaceutical Education; forty copies to be sent to the American Foundation for Pharmaceutical Education.

With the material which has been provided to instructors in this field and to the colleges, it should be possible to arrange well organized and carefully planned courses for inclusion in the college curricula. The material available in these volumes should provide practical subject matter for sound and profitable instruction in the field of Pharmacy Administration.

B. V. CHRISTENSEN,
Chairman Committee on Seminar in Pharmacy Administration.

New Books

Biological Standardization, by J. H. Burn, Professor of Pharmacology, University of Oxford, D. J. Finney, Lecturer in the Design and Analysis of Scientific Experiment, University of Oxford, and L. G. Goodwin, Member of the Staff of the Wellcome Laboratories of Tropical Medicine, Second Edition, 1950. 440 pages. 77 figures. Oxford University Press. Price $6.75.

It is welcome news that the long awaited second edition of Biological Standardization has appeared. The space devoted to statistical methods has been almost quadrupled; with the higher requirements in mathematics, perhaps the pharmacy student, if not able to "swim", may be, at least, able to keep his head above water in the chapter on Statistical Analysis by Dr. Finney! It is fortunate that Professor Burn again has included only those methods of assay with which he has had some first hand experience, because a variety of new methods are included, such as the fowl's blood pressure technique for the posterior pituitary, the rat method as a substitute for the drake method for the adrenal cortex and methods for the anterior pituitary hormones. A number of methods for testing new drugs, such as analgesics and antipyretics, are also presented. Of these, the final five chapters, dealing with testing chemotherapeutic agents have been contributed by Mr. Goodwin. The chapters on vitamins A, B, and C have been deleted. It seems fortunate that a summary of the results of extensive studies from Canada and this country on digitalis assay is not included; these studies illustrate the importance of such factors as the time interval in the frog assay and of the concentration of the tincture and the choice of anesthetic in the cat method, thus making a revision of certain parts of the text highly desirable. Finally, it will pleasantly surprise the many prospective buyers of the 152 page larger edition that the cost is actually lower, with the workmanship apparently as substantial as before.

—H. G. O. H.

Textbook of Anatomy and Physiology by Catherine Parker Anthony, B. Z., R. N., instructor in anatomy and physiology, Lutheran Hospital, Cleveland, and in Frances Payne Bolton School of Nursing, Western Reserve University. 1950. Third edition. 614 pages. Illustrated. The C. V. Mosley Company. Price $4.00.

The text is intended primarily for nurses and like previous editions has been written to include only the important material that a nurse needs to know in the conduct of her professional work. The author quotes an old English proverb which reads, "He teacheth ill that teacheth all". The author has done well and has cut a pattern which writers in many other fields might do well to follow in the preparation of introductory textbooks.—R. A. L.

Introduction to the Bacteria by C. E. Clifton, Ph. D., professor of bacteriology, Stanford University. 1950. First edition. 528 pages. Illustrated. McGraw-Hill Book Company, Inc. Price $5.00.

It would seem to one that is not a bacteriologist, that the author has made an ideal approach to the study of the subject. The text provides a general introduction to micro-organisms with special emphasis placed upon those that have to do with human welfare. The presentation is designed to illustrate the general principles of microbic

behavior rather than to describe details of classification. The how and why of bacterial behavior are the questions which stimulate the curiosity of man in his effort to find the means to control disease caused by micro-organisms. Chapters devoted to factors which influence growth of bacteria and factors which cause their death; chapters on the bacteria of the soil, of water, of the air; on the preparation and preservation of food; on individual microbiology; on infection and resistance; and on the microbiology of infectious diseases and serological reactions, indicate the scope of and the practical applications made by the author. The text is characterized by its easy reading and the introduction of historical aspects of the developers and developments of the field, make it an exceptional teaching tool.—R. A. L.

Scientific Principles in Nursing by M. Ester McClain, R.N., B.S., M.S., instructor in nursing arts, Providence Hospital School of Nursing, Detroit; formerly instructor in nursing arts, Providence Division of the School of Nursing Education, Catholic University of America, Washington. 1950. 410 pages. Illustrated. The C. V. Mosby Company. Price $3.00

The author states, "**Scientific Principles in Nursing** is not an exhaustive treatise. Techniques are not described nor are procedures given in detail. The purpose of the book is to show how some basic scientific principles may be used in nursing practice. Nursing procedures are carried out more intelligently if the nurse understands the reasons behind her methods. Principles provide a safe guidance for performance. If the principles are well understood and applied, the method is a good one." The author's philosophy as expressed in this quotation is educationally sound. It is a statement which, if followed, will make a profession rather than a trade out of any field of human activity. No one could use a better pattern in writing a text.—R. A. L.

Track and Field Athletics by George T. Bresnahan, assistant professor of physical education, formerly track coach, State University of Iowa and W. W. Tuttle, Ph.D., professor of physiology in the same institution. 1950. Third edition. 500 pages. Illustrated. The C. V. Mosby Company. Price $5.00.

The aim of the authors in writing the first edition of this book was, "To place in a single volume material which is adequate for developing the beginner as well as for improving performance of the advanced athlete". "The science of track and field athletics, like any other science, is continually progressing. This demands that all textbooks dealing with this subject must be revised frequently if they are to serve their purpose best. In presenting the third edition of **Track and Field Athletics,** the material included has been made to conform to the newest methods and the most progressive thinking." Athletics

has become a major subject in the curricula of pharmacy schools not connected with a university. In our state supported schools also, the pharmacy student is more and more becoming an important factor in general college athletics. This book is a contribution to the understanding of athletic science, not only for the student and the instructor but for the general public as well.—R. A. L.

The Pharmacopoeia of the United States of America (The United States Pharmacopeia), prepared by the Committee of Revision and published by the Board of Trustees, by authority of The United States Pharmacopoeial Convention, Inc., of 1940. Fourteenth Revision (U.S.P. XIV) and the First U.S.P. XIV Supplement. Copyright, 1950. 1067 pages (First Supplement, 4 pages). Printed by the Mack Printing Company. Price $9.00.

It seems almost presumptious to attempt a review of the U.S.P. XIV. Its purposes, its scope, and the progress being made, have been before the profession constantly during the entire period of revision. Sufficient to say that all individuals in the health professions and the public which they serve should be grateful for the service that has been rendered by the hundreds of individuals who have in any way had a part in the labor of revision and to Dr. E. Fullerton Cook, upon whose shoulders rested the responsibility of getting the job done. U.S.P. XIV will stand as the crowning achievement of his many years of service in Pharmacopoeial revision. The Fourteenth Revision becomes official November 1, 1950, with the exception of a few drugs, for which the U.S.P. XIV standards become official November 1, 1951, as indicated on the title page.—R.A.L.

Psychology, Principles and Applications, by Marian East Madigan, Ph.D., Specialists Research Department, Milwaukee Vocational and Adult Schools; Visiting Professor, Summer Sessions, University of Arizona, Educational Measurement and Guidance. 1950. 403 pages. Illustrated. The C. V. Mosby Company. Price $4.25.

The author's objective in writing the text was to give the student a brief introduction to the study of psychology; a foundation for the learning process; an understanding of the biological and social forces affecting behavior; and an appreciation of the usefulness of psychology as a means of improving every day living. The text centers on four units: the Nature and Methods of Psychology; the Essentials of Learning the Biological and Social Bases for Behavior; and Personality and Adjustment. The author avoids an academic attitude and uses instead, a therapeutic approach by providing opportunities for active learning. Even the casual reader will find it informative and this reviewer finds it helps him to understand himself.—R.A.L.

Montana

Montana State University, School of Pharmacy, Missoula. (1917)
Curtis H. Waldon, Dean.

Nebraska

The Creighton University, College of Pharmacy, Omaha. (1916)
William A. Jarrett, Dean.

University of Nebraska, College of Pharmacy, Lincoln. (1913)
Joseph B. Burt, Dean.

New Jersey

Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy, Newark. (1923)
Thomas D. Rowe, Dean.

New York

University of Buffalo, School of Pharmacy, Buffalo. (1939)
A. B. Lemon, Dean

Columbia University, College of Pharmacy of the City of New York. (1939)
Charles W. Ballard, Dean.

Fordham University, College of Pharmacy, New York. (1939)
James H. Kidder,. Dean

Long Island University, Brooklyn College of Pharmacy, Brooklyn. (1939)
Hugo H. Schaefer, Dean.

Union University, Albany College of Pharmacy, Albany. (1945)
Francis J. OBrien, Dean

North Carolina

University of North Carolina, School of Pharmacy, Chapel Hill. (1917)
Edward A. Brecht, Dean.

North Dakota

North Dakota Agricultural College of Pharmacy, Fargo. (1922)
William F. Sudro, Dean.

Ohio

Ohio Northern University, College of Pharmacy, Ada. (1925)
Rudolph H. Raabe, Dean.

University of Cincinnati, Cincinnati College of Pharmacy. (1947)
J. F. Kowalinski, Dean.

The Ohio State University, College of Pharmacy, Columbus. (1900)
B. V. Christensen, Dean.

University of Toledo, College of Pharmacy, Toledo. (1941)
Charles H. Larwood, Dean

Oregon

Oregon State College, School of Pharmacy, Corvallis. (1915)
George E. Crossen, Dean

Pennsylvania

Duquesne University, School of Pharmacy, Pittsburgh. (1927)
Hugh C. Muldoon, Dean.

Philadelphia College of Pharmacy and Science, Philadelphia. (1900)
Ivor Griffith, Dean.

Temple University, School of Pharmacy, Philadelphia. (1928)
Joseph B. Sprowls, Dean.

University of Pittsburgh, School of Pharmacy, Pittsburgh. (1900)
Edward C. Reif, Dean.

Philippines

University of the Philippines, College of Pharmacy, Manila. (1917)
Patrocinio Valenzuela, Dean.

Puerto Rico

University of Puerto Rico, College of Pharmacy, Rio Piedras. (1926)
Luis Torres-Diaz, Dean.

Rhode Island

Rhode Island College of Pharmacy and Allied Sciences, Providence. (1926)
W. Henry Rivard, Dean.

South Carolina

Medical College of the State of South Carolina, Charleston. (1940)
William A. Prout, Director.

University of South Carolina, School of Pharmacy, Columbia. (1928)
Emery T. Motley, Dean.

South Dakota

South Dakota State College, Division of Pharmacy, Brookings. (1908)
Floyd J. Leblanc, Dean.

Tennessee

University of Tennessee, School of Pharmacy, Memphis. (1914)
Robert L. Crowe, Dean.

Texas

University of Texas, College of Pharmacy, Austin. (1926)
Henry M. Burlage, Dean.

Virginia

Medical College of Virginia, School of Pharmacy, Richmond. (1908)
R. Blackwell Smith, Jr., Dean.

Washington

State College of Washington, School of Pharmacy, Pullman. (1913)
Pearl H. Dirstine, Dean.

University of Washington, College of Pharmacy, Seattle. (1903)
Forest J. Goodrich, Dean.

West Virginia

West Virginia University, College of Pharmacy, Morgantown. (1920)
J. Lester Hayman, Dean.

Wisconsin

University of Wisconsin, School of Pharmacy, Madison. (1900)
Arthur H. Uhl, Dean.

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